The IRON AGE
December 4, 1958 A Chilton Publication The National Metalworking Weekly

Luminous Walls: Furnace Design For Fast Heating P. 127

Why Ductile Iron Market Is Growing – P. 89
Digest of New Materials, Components – P. 156
Digest of the Week – P. 2-3

ARISTOLOY

No guesswork here. Soaking cycles and temperatures are accurately recorded from this room. Each pit is individually controlled, and soaking of different steels can be varied to meet your requirements.

CONTROLLED SOAKING Produces Controlled Quality Steels

Controlled heating before rolling aids in producing controlled quality steels. Copperweld's new battery of soaking pits provides precise regulation of temperature and time during this important operation. The benefit to customers — controlled quality and improved Aristoloy products.

ARISTOLOY STEELS

COMPLETE INFORMATION about Aristoloy electric furnace carbon, alloy, and stainless products, available as blooms, billets, and bars.

COPPERWELD STEEL COMPANY
Aristoloy Steel Division
4001 Mahoning Avenue • Warren, Ohio
EXPORT: Copperweld Steel International Co. • 225 Broadway, New York 7, N. Y.

AMERICAN STEEL WAREHOUSE ASS'N

IF ALL THE FLOOR SPACE

TIED UP IN STEEL INVENTORIES

WERE COMBINED INTO ONE GIANT WAREHOUSE,

WHAT A TAX BILL YOU'D HAVE!

BUT, FORTUNATELY, YOUR LOCAL STEEL SERVICE CENTER

PAYS THE BILLS ON FLOOR SPACE

WHEN YOU BUY FROM HIS INVENTORY.

TAXES ARE JUST ONE OF THE MANY COSTS

OF POSSESSION FOR STEEL

YOUR LOCAL STEEL SERVICE CENTER

CAN HELP YOU REDUCE!

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Bethlehem Pacific Coast Steel Corporation,
San Francisco

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor

Managing Editor — E. C. Beaudet
News-Markets Editor — J. B. Delaney
Technical Editor — J. J. Obrzut
Special Features — R. D. Raddant
Machinery Editor — E. J. Egan, Jr.
Metallurgical Editor — P. M. Unterweiser
Materials Editor — Wm. Czygan
Engineering Editor — R. H. Eshelman
Art Director — T. S. Peaby

Associate Editors: F. J. Starin, P. J. Cathey, R. Schulin, F.T.P. Plimpton, Jr.
Assistant Editor: J. A. Moore. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; H. R. Neal, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regelmbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. M. Edmonds, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. R. Coughlin, Seattle; A. T. Collins, Houston; F. Sanderson, Toronto; F. H. Harley, London, England; Chilton Editorial Board: Paul Wooton, Washington representative.

WASHINGTON EDITORIAL OFFICE
Washington 4....National Press Bldg.
Robert Gunning—
Readability Consultant

BUSINESS STAFF

Production Manager — Warren Owens
Director of Research — Oliver Johnson
Marketing Director — R. H. Groves
Circulation Mgr. — W. M. Coffey
Promotion Manager — Richard Gibson
Asst. Research Dir. — Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

•Denotes editorial office also

Atlanta 9.....J. W. Sangston
1371 Peachtree St., NE — Trinity 6-4110
•Chicago 1..T. H. Barry, W. R. Pankow
360 N. Michigan Ave. — Randolph 6-2166
•Cleveland 15, R.W.Watts, R. L. White
930 B. F. Keith Bldg. — Superior 1-2860
Columbus 15, Ohio...Harry G. Mumm
LeVeque-Lincoln Tower — Capital 1-3764
Dallas 6.....W. J. Smyth
189 Meadows Bldg. — EMerson 8-4751
•Detroit 2.....W. J. Mulder
103 Pallister Ave. — Trinity 1-3120
•Los Angeles 28.....R. Raymond Kay
2420 Cheremoya Ave. — Holly'd 3-1882
•New York 17...C. T. Post, J. E. Hand
100 E. 42nd St. — Oxford 7-3400
•Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & 56th Sts. — Sherwood 8-2000
•Pittsburgh 22.....T. M. Fallon
502 Park Bldg. — Atlantic 1-1830
San Francisco 3.....Don May
1355 Market St. — UNderhill 1-9737
W. Hartford 7..Paul Bachman, R. Goss
62 LaSalle Rd. — Adams 2-0486
England.....Harry Becker
15 Gratton St., Altrincham, Cheshire

A Chilton Publication

CHILTON OFFICERS & DIRECTORS

Joseph S. Hildreth, Ch. of the Board
G. C. Buzby, President

Vice-Presidents: P. M. Fahrendorf, L. V. Rowlands, G. T. Hook, R. E. McKenna; Treasurer, W. H. Vallar; Secretary, John Blair Moffett; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., J. C. Hildreth, Jr.—Comptroller, Stanley Appleby.

Indexed in Applied Science & Technology Index and Engineering Index.

BPA NBP

Copyright 1958 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

IRON AGE

December 4, 1958—Vol. 182, No. 23

Digest of the Week in

★Starred items are digested at right.

EDITORIAL

Frozen Viewpoints: Don't Be Caught With Them 7

NEWS OF INDUSTRY

★**Special Report:** Behind the Growing Market for Ductile Iron 89
Merger Decision Far-Reaching 91
★Watch Those Labor Precedents 92
★Imports Threaten Wire Products 93
★Growth Market in Containers 94
★Bearings Orders Up 95
★A New Approach to Retirement 96
Iron Powder Sales 97
The IRON AGE Salutes 101

FEATURE ARTICLES

★Luminous Wall Firing: Low Cost Idea in Rapid Heating 127
★Roller Leveler Adds Precision 130
Two-in-One Pass Ups Bar Yield 132
★New Uses for Heavy Plate 133
★Plasma Arc Torch Changes Methods 136
★Non-Skid Grating Process 138
★Cost Drops for Tape Control 140
Machine Triples Assembly Rate 142

NEWS ANALYSIS

Newsfront 9
Report to Management 103
★Automotive 105
★Washington 109
West Coast 111
★Machine Tool 113

MARKETS & PRICES

Market Planning Digest 87
★**The IRON AGE Summary** 171
★Purchasing 172
Steel Product Markets 174
Index to Prices 175
Iron and Steel Scrap Markets 176
Nonferrous Markets 180
Clearing House 194

REGULAR DEPARTMENTS

Fatigue Cracks 13
New Materials, Components 156
New Equipment 162

INDEX TO ADVERTISERS 200

NEWS ARTICLES

DUCTILE IRON GROWS

Ten Years of Progress—Industry sources say ductile iron output could hit 1 million tons per year, if the right markets are found. This will bring you up to date on the progress of this product. P. 89

LABOR PRECEDENTS

Past Practice Can Haunt You—Management can be hamstrung by labor precedents established over the years. They're a factor in a broadening area of labor. P. 92

CONTAINERS IN DEMAND

Shippers Buying — Steamship companies, railroads, and truckers

have rediscovered "containerization." Giant van-size containers offer many economies. P. 94

RETIREMENT POLICY

A New Approach—Industry may be barking up the wrong tree with its current attitude toward retirement. Survey shows retired men have few emotional problems. The main worry is finances. P. 96

Metalworking

LUMINOUS-WALL FIRING: It's a low-cost idea in rapid furnace heating, developed by A. F. Holden Co. Discussing the theory behind the new method are (left to right) A. F. Holden, president, J. B. Carey, vice president, and R. D. Waalkes, chief engineer. P. 127

ALUMINUM IN AUTOS

Promotion Campaign — All-aluminum car designs exhibited in Detroit are aimed at whetting designers' imaginations. P. 105

BUDGET

Ike vs Congress—The President will try to hold the spending line in '59, but indications are that Congress won't let him. P. 109

FEATURE ARTICLES

ROLLER LEVELER

Turns Out Quality—It not only does a quality job of ridding sheets of distortion, but it does it at a high rate of production. The key to performance is the small size of the work rolls that bend the metal beyond its yield point to effectively relieve stress. P. 130

BUILD CLAD CHANNELS

In Structural Plate — Corrosion-resistent channels fill the need for heat transfer in press platens, reaction vessels, and chill plates. The channels are made by milling grooves in the steel base plate. A cladding layer bonded to the base plate with copper covers the coil-like passageways. P. 133

PLASMA ARC TORCH

For New Shapes, Coatings—Working with controlled temperatures up to 30,000°F, a new plasma arc torch can apply pure tungsten on a missile cone. Result: a coating that withstands 5000°F. By depositing tungsten over a brass mandrel, it's possible to make special shapes. P. 136

AUTOMATIC FORMING, WELDING

Of Non-Skid Grating—In one shift, a new automatic welding machine does the work of 24 hand welders. More than just a welding unit, it's a complete grating and grill making plant. P. 138

TAPE CONTROL

By-Passes Computers — A new magnetic tape control system skips the need for computer programming and auxiliary equipment. The unit records actual machine tool motion. P. 140

MARKETS & PRICES

BEARINGS

Business Better—After a couple of false starts, bearings makers say they are really starting to move out of the recession. Lead times are lengthening, order books are heavier. P. 95

STEEL IMPORT THREAT

Widens Out—Foreign mills are shipping a growing range of products into American markets. A recent order for U. S. Navy ship plate went to a Japanese mill. Domestic wire mills want Tariff Commission to curb import threat. P. 93

TOOL BUYING REBOUNDS

October Results Are In—The recovery is not uniform, but almost all builders are happy about the way orders are picking up. October was best month this year. P. 113

MORE ZIP IN STEEL

Order Volume Is Heavier—There's more zip to the steel market this week. Orders are heavier and a greater variety of users are coming into the market. P. 171

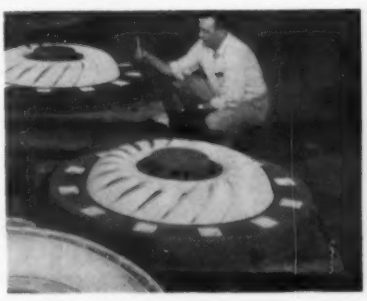
CENTRALIZED BUYING

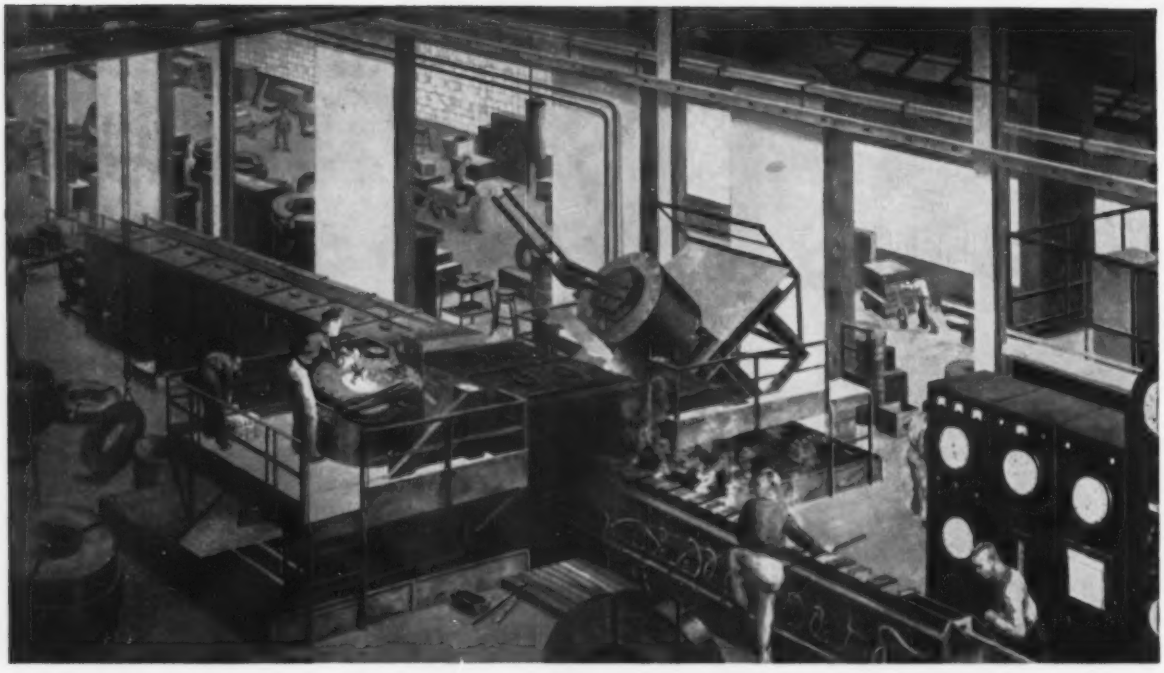
AS&W Adopts System — Cost-saving through integrated data processing played key role in American Steel & Wire shift. Company expects it will allow more time for market evaluation. P. 172

NEXT WEEK

NONFERROUS CASTINGS

Versatile Process—It's a changing field reaching out with new alloys into new areas of use. Next week's special report shows how it pays to keep an eye on new developments. It's a quick rundown on current practice.





60 CYCLE INDUCTION MELTING OF HIGH LEADED BRONZES

15 years ago, THE CLEVELAND GRAPHITE BRONZE COMPANY, division of CLEVITE CORPORATION, pioneered 60 CYCLE INDUCTION MELTING of bronzes with up to 35% lead. Special furnaces developed by AJAX for this difficult job are an important element in their unique continuous production line for steel-backed bronze bearing strip. 60 CYCLE INDUCTION MELTING furnaces resulted in substantial improvements and cost savings over gas-fired units used earlier for that purpose. Today, CLEVITE operates six continuous lines in this country and abroad with AJAX 60 CYCLE INDUCTION MELTING furnaces, producing enough strip to make 130 million bearings and bushings per year.

The heavy duty 60 cycle inductor developed by AJAX and pioneered by CLEVITE will attain a lining life of one year with bronzes of substantial lead content. Electromagnetic stirring assures uniform alloy and close temperature control. Compared to externally fired equipment, metal loss savings run into many thousands of dollars per year. Recently, several large producers of leaded bronze castings converted their foundries entirely to 60 CYCLE INDUCTION MELTING.

While this is one of the most difficult metals to handle, the advantages of 60 CYCLE INDUCTION MELTING stand out today wherever copper alloys are melted. As specialists in 60 CYCLE INDUCTION MELTING, we have developed furnace types to best fill each application.

AJAX USA

ENGINEERING CORPORATION

TRENTON 7, NEW JERSEY

60 CYCLE INDUCTION MELTING

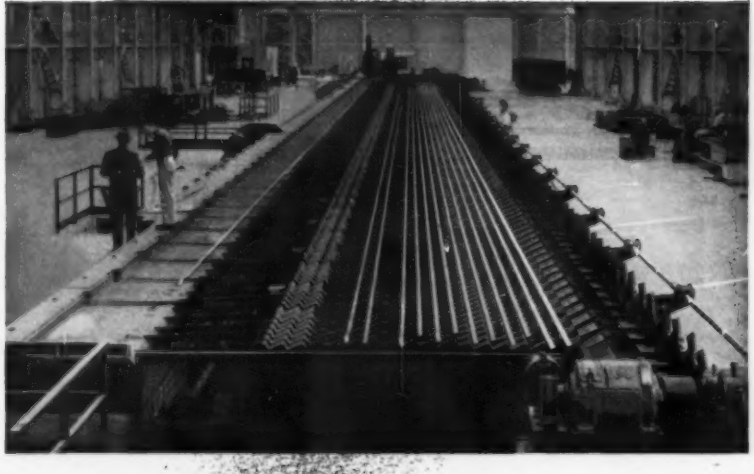
Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company

MORGAN MILLS
MORGAN QUALITY

from START to FINISH

MERCHANT AND ROD MILL
Atlantic Steel Company
Atlanta, Georgia

Morgan engineered and equipped from charging car to cooling bed this new Atlantic Steel Mill is now in full operation. This mill is just one of two hundred and twenty-one Morgan continuous rolling mills which have been purchased by steel plants throughout the world.

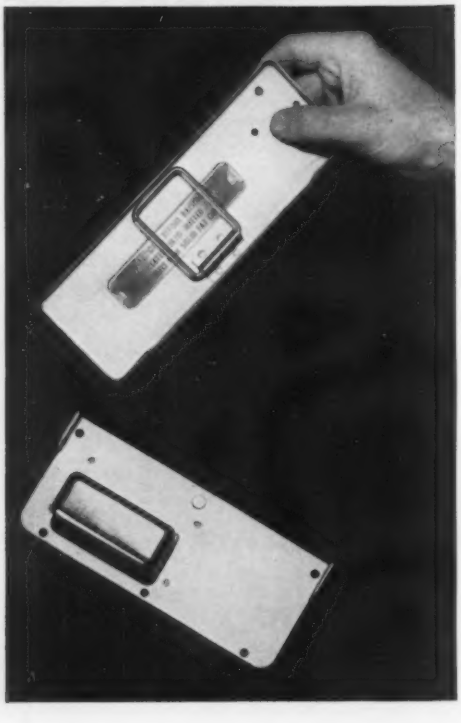


MORGAN
WORCESTER

MORGAN CONSTRUCTION CO., Worcester, Massachusetts

Rolling Mills • Morgoil Bearings • Wire Mills • Regenerative Furnace Control • Ejectors • Gas Producers

RM 72



SAVED: $2.50 A UNIT

With 4 Heat-Resisting Parts of Armco ALUMINIZED STEEL

Looking for a low-cost metal to "handle" high heat?

Read what Mr. J. Jarmuth, Plant Superintendent, Wells Manufacturing Company, San Francisco, says about Armco ALUMINIZED STEEL Type 1 and cost savings in commercial frying units:

"Every item in our Counter-Mate line contains ALUMINIZED STEEL. Its advantages in high-heat applications are obvious, but we have been able to obtain equally important benefits from the cost standpoint.

"Neither plated nor baked enamel parts on concealed or semi-concealed details of our units have been completely satisfactory. Both have been far more expensive than ALUMINIZED STEEL.

"For example, on our F-77 double fryer we have improved the durability of the product by switching to ALUMINIZED STEEL for control box backs and bottoms, shell bases, and outlet boxes. At the same time, we have effected a net saving of $2.50 a unit and have eliminated the coordination problem with local plating shops.

"As we become more and more familiar with fabricating techniques in forming, drawing, and spot-welding ALUMINIZED STEEL, we are expanding our use and are confident that it is a major factor in the successful quest for a better product at lower cost."

Perhaps Armco ALUMINIZED STEEL is a low-cost answer for heat-resisting parts of your product. Fill in and mail coupon for complete information.

New steels are born at Armco

ARMCO STEEL CORPORATION
7018 Curtis Street, Middletown, Ohio

Send me more data about Armco ALUMINIZED STEEL Type 1

We make_____

Name_____ Title_____

Firm_____

Street_____

City_____ Zone____ State_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Frozen Viewpoints: Don't Be Caught With Them

It is quite the thing these days to be conservative about the immediate future of the economy. The gist: Since we had sharp improvement from last April's low point in production, it is only natural that the next six months will see a slower pace in the recovery.

This may well be the case. But then again it might not be the case at all. There is no sure sign that the next six months will show a slow pattern of recovery.

It is true that most economists deduce from their "advance indicators" that business will be a little more hesitant in its forward climb. They point to interest rates, using up of housing money, possible clamp down on government spending, a greater number of strikes, and continuation of heavy unemployment.

Then there are those who say that new plant and equipment buying may not turn upward or may not amount to much of a stimulus until late next year. Add to them those who are sure 1959 will be a you-know-what-kind-of-a-year for autos.

There is one set of factors which can make mincemeat out of such conservative pronouncements. That set: You and I and a lot of other people who may decide overnight to buy all the things that we had postponed buying. That would change the picture considerably.

Then there are the railroads and the oil and gas industry to be heard from. They will be stirring from their lethargy next spring. The IRON AGE's brand new quarterly Survey of Metalworking Capital Appropriations (conducted by the National Industrial Conference Board) shows signs of improvement in railroad capital goods buying. First published last week, the study will be a continuing one.

This same survey (which tells you how much new plant and equipment various metalworking divisions plan to buy) also points up a sizable increase in farm machinery company spending. True, many other segments of metalworking are still far below their 1957 appropriations. But that doesn't mean they will stay that way.

Additional material by The IRON AGE and the NICB in this never-before published analysis of metalworking appropriations for capital goods will paint a picture of future spending, expansion, and production.

Don't freeze your mind. It could well be that general business improvement is coming much faster than you imagine. Are you ready for it?

Tom Campbell

Editor-in-Chief

(Advertisement)

A Review of the Phosphate Coatings

Specified for the Protection of Metal Surfaces

By HUGH GEHMAN, Assistant Manager, Product Development Dept., AMCHEM PRODUCTS, INC.

Phosphate coatings are protective inorganic finishes that actually change the chemical nature of metal surfaces. The metal reacts with the applied phosphate solution to form a nonmetallic, crystalline coating which serves to:

- **Improve paint adhesion**
- **Provide protection against corrosion**
- **Increase lubricity of friction surfaces**
- **Facilitate mechanical deformation of metals**
- **Decorate—in many instances**

Satisfactory protection of steel, zinc and aluminum surfaces against corrosion, paint peeling and blistering, and hard wear requires precision methods of chemical conversion coating.

Types of Conversion Coatings

There are seven classes of chemical conversion coatings commonly specified and used throughout industry today. They are as follows:

Zinc-iron phosphate (ACP Granodine®). This is the heaviest type of coating (gray in color) used for prepaint treatments on steel, iron and zinc surfaces. The process requires five or six operations: cleaning; rinsing; rust removal, if necessary; coating; rinsing; and a second rinse. Coating weight ranges from 100 to 600 mg per sq. ft.

Medium or large volume production of automobile bodies, appliances, projectiles and cabinets can be handled effectively.

The coating solution improves paint adhesion by forming a crystalline deposit over the metal surface. This deposit is rough, as revealed microscopically, and so offers an ideal gripping surface for paint particles.

Manganese-iron phosphate (ACP Thermoil-Granodine®). This is a heavy black coating used on friction surfaces to prevent galling, scoring and seizing of parts. Typical metal parts treated are pistons, piston rings, gears, cylinder liners, camshafts, tappets and various small arms components.

Iron phosphate (ACP Duridine®). This is a comparatively new process that places a light coating on surfaces for improved paint adhesion. Since cleaning and coating occur in the same bath, it has only three to five stages.

The iron phosphate treatment is a spray process suited for medium to large volume, large or small work. Precleaning is normally unnecessary, an economy factor in its favor.

Products protected by this process are steel or iron fabricated units, such as cabinets, washing machines and refrigerators. Weight of coating is 50 to 100 mg per sq. ft.

Zinc phosphate (ACP Lithoform®). This is a crystalline coating produced on galvanized iron and other zinc surfaces—also cadmium—for improving paint adhesion. The purpose of the coating is to provide a paint-gripping surface and to prevent the reaction between acidic components of the paint and the zinc metal, with the formation of soaps and loss of paint adhesion.

This coating is applied in weights of 75 to 500 mg per sq. ft. There are no limitations on volume or production or on size of products treated. Zinc phosphate coating is used on zinc alloy die castings, zinc or cadmium plated sheet or components, hot dip galvanized stock, and Galvanneal.

Amorphous phosphate (ACP Alodine®). This is a relatively new protective coating for aluminum and aluminum alloys. It may be used in place of anodic deposition for improved paint adhesion and corrosion resistance.

This coating is practical for production in any volume. Coating weight is 100 to 600 mg per sq. ft. Products treated include helmets, belt buckles, aircraft and aircraft parts, bazookas and rocket motors, roofing and siding. Particularly good when aluminum is painted prior to forming.

Zinc-iron phosphate for oil absorption (ACP Permadine®). This is a relatively heavy coating adapted to the retention of rust-inhibiting drying or nondrying oils and waxes on ferrous metal surfaces. The coating is applied to a weight of 1000 to 4000 mg per sq. ft.

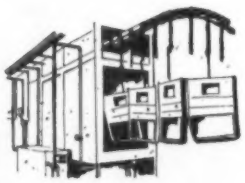
The process is satisfactory for large or small work in any volume—nuts, bolts, hardware, guns, tools, etc.

Zinc-iron phosphate for metal forming (ACP Granodraw®). This is a specialized coating used in conjunction with a suitable lubricant to facilitate the cold mechanical deformation of steel. The coating acts as an anchor for the lubricant throughout drawing, extrusion, and cold forming operations.

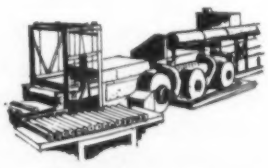
It is a successful treatment for products such as blanks and shells for cold forming, heavy stampings, impact extruded shapes, drawn wire and tube.

For more complete information about any one or all of these chemical conversion coatings, contact an ACP sales representative or write us at Ambler, Pa.

Typical Installations of Phosphate Coating Systems

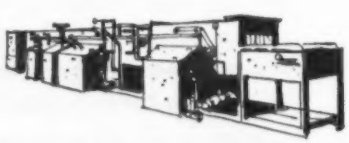


Customer: Truck manufacturer
Problem: Preparing cab parts for painting
Cycle: Phosphate wash; phosphate wash; rinse; chromic acid rinse; dry



Customer: Aluminum screen manufacturer
Problem: Final finish of aluminum shade screen
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry

Customer: Water heater manufacturer
Problem: Preparation of water heater shells for synthetic enameling
Cycle: Phosphate wash; rinse; chromic acid rinse; dry



Customer: Hardware manufacturer
Problem: Preparing hardware parts for painting
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry

Amchem Products, Inc.
Ambler 20, Pa.

CHEMICALS ACP PROCESSES

Formerly
AMERICAN CHEMICAL PAINT COMPANY
DETROIT, MICH. • ST. JOSEPH, MO.
NILES, CALIF. • WINDSOR, ONT.

New Chemical Horizons for Industry and Agriculture

Weld Alloy for High Stress

A new air-hardening, weldable and fully martensitic alloy meets the need for a metal that can be used for highly stressed parts at temperatures to 1050°F where joining is a problem. Weldments can be cold-worked after stress relieving or annealing.

Ready for Small Car Trend

While firm decisions have yet to be made, one automaker has engineered a line of small cars on a 107-in. wheelbase. Models include two- and four-door sedans and station wagons. They don't have to be built, but they can be ready in time for 1960 model production. The same firm is now engineering another new line around a 114-in. wheelbase. Both cars feature conventional front-mounted engines.

Clean Castings in Salt Bath

A chemical salt bath is proving highly effective for removing surface scale and investment material from precision castings. The technique can also serve to temper or stress relieve parts. Prolonged cutting tool life, improved machinability and better service of operational parts are among the benefits.

Office for Labor Reports

Keeping track of union pension and welfare funds under the new reporting and disclosure law will cost the government about a million dollars a year. Labor Department officials, who will collect the reports and do what little enforcement the law provides, will set up a new office next year to handle the job.

Check U.S. R&D Spending

Industry receives better than one-third of the government's massive research and development spending. This fiscal year, the government will obligate $3.9 billion for research and development, of which 38 pct will go to industry. The military will spend another $800 million for engineering services with industry. But the government still spends the lion's share (44 pct) in its own facilities.

Electronic Tracer Welding

Soon to be revealed is an advance in automatic welding. The new equipment uses an electronic tracer to guide the CO_2 welding head along joints with great precision. Cost of equipment will be relatively low, it's reported, since unit is simple with few elements.

Boost Creative Engineering

Here's how automation in engineering pays off for one equipment maker: Through the use of computers, the company reduces the routing portion of its engineering workload from 70 to 30 pct. Result—80 pct of the engineering time on design projects is now rated as creative.

Fast Melt for Snow Removal

Now in design stages, a portable snow removal unit will incorporate the heating technique of a new industrial furnace. The highly-efficient method would melt snow faster than it can be removed with present methods. Several airports are said to be interested.

Drafting Stamps Aid Layout

Users of one firm's control-system components now have a handy drafting tool for quickly sketching a system layout. Building-block rubber stamps represent such instrument controls as transmitters, receiver-recorder controllers, control relays, manual loaders and control valves.

Choose Right-to-Work Site

Nobody is saying so out loud, but states with right-to-work laws of recent origin are already experiencing a gain in inquiries from manufacturers who are getting ready to expand and prefer to do it in a right-to-work climate. In fact, some new plants are already under way in which this was a major consideration.

"Task-Forged" savings shape up in all sizes!

They're all different in size, shape, requirements, application. Yet all of these typical component parts "Task-Forged" by COMMERCIAL have one common denominator—important savings in metal and machining.

Unusual shapes involving multiple upsetting, through-pierced holes, eccentric displacement of metal for its more economical use, customized tolerances? They're only part of the big savings story.

Many of the jobs shown here were little more than "ideas" when customers first came to COMMERCIAL for assistance. COMMERCIAL'S "Task-Forging" team analyzed the "ideas"... recommended design changes to effect greater economies in production . . . performance tested early working models . . . and finally produced the components as stronger, consistently sound upset forgings.

And whatever the size of the component or the final application involved —from 80-pound ball-joint housings to stub ends weighing less than 39 ounces, or in applications ranging from construction equipment to military missiles —it's the same story. Every day "Task-Forging" is successfully meeting the chailenge of unusual shapes.

Whether you're planning a new product or want to improve on the forming of a part in an established product, perhaps COMMERCIAL'S "Task-Forging" service—backed by over 30 years of metal forming experience and specialized equipment which includes 1½" thru 8" upsetters—may be able to help you. Address: Commercial Shearing & Stamping Company, Dept. K-49, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

SPECIALISTS IN THE SHAPE OF THINGS TO COME

Brainwashing

Sir — The editorial "Who is brainwashing? We're Doing It Ourselves," (Nov. 20 issue) is an excellent article, and, believe me, so true. Every high school student should be supplied with a copy. Please send me ten copies.—E. W. Schoen, Chief Metallurgist, Huck Mfg. Co., Detroit, Mich.

Fasteners

Sir—We have read with interest Mr. Federico Strasser's article on "Ways to Keep Fasteners Locked" (Sept. 25 issue) and G. A. Remley's comments in the Nov. 6 issue. Mr. Remley comments: "If a bolt is tightened sufficiently to stretch it so that effective friction is created in the head of the bolt, any locking device is superfluous."

This theoretically may be correct but in our experience there are many, many cases where it simply does not work out in practice. Even under the best laboratory conditions of thread lubrication, hardness of boss and smoothness of thread, etc. the amount of tension achieved for a given wrenching torque is exceedingly erratic and unpredictable. The only accurate means to check proper bolt tension is too cumbersome for use on production assembly lines.

We cannot subscribe entirely to Mr. Strasser's enumeration of "ways to keep fasteners locked." He has omitted a long list of self-locking fasteners (including our own "LOKTHRED" line) that are being used successfully in almost limitless applications to provide locking without the use of extra parts and added assembly cost.—E. B. Sturges, 2nd, Pres., Lock Thread Corp., Detroit, Mich.

"He seems to know you, sir. He asked for 'Stinky' ".

Ferrous Alloys

Sir—Please send me a reprint of "Special Ferrous Alloys" Sections 1 through 8, pp 185-200, in your issue of Oct. 16. In this special report you have briefly and concisely covered a variety of ferrous alloys of interest to us. This reprint will be an excellent addition to our reference files. — R. W. Conners, Lt. Colonel, USAF, Chief, Material Branch, Materials & Equipment Div., Air Research and Development Command, Washington.

Sir — Those in our Stainless Development Laboratory are quite interested. We would like six copies, if possible.—G. L. Perkins, Enduro Development Laboratory, Republic Steel Corp., Massillon, Ohio.

Sir—We have found this to be a very interesting and helpful article and we would like to have these extra copies for other members of our Engineering Department.—J. J. Shuk, Chief Engr., Jenkins Bros., Bridgeport, Conn.

NEW DESIGN

data for **Pearlitic Malleable** in this NEW BOOK!

This 76-page handbook furnishes an introduction to pearlitic malleable as well as a ready reference to the latest information and data on pearlitic malleable obtained from many sources by the Malleable Research and Development Foundation.

Pearlitic malleable is a relatively new material in the metallurgical field, and its increasing application in castings for critically loaded structural parts in modern machines and other products of all kinds, testifies to its acceptance by quality-minded engineers. Pearlitic malleable has toughness and machinability at high strength levels and is relatively low in cost.

A new design approach to pearlitic malleable specifications is presented in three charts that show the relationship between physical properties and Brinell hardness. The charts furnish the information required to translate basic design needs into final specifications.

All the facts and figures needed for pearlitic malleable design are here in this handbook. Any person responsible for the specifying or selection of materials is invited to send coupon today for complimentary copy.

IA-12

MALLEABLE RESEARCH AND DEVELOPMENT FOUNDATION
Granville, Ohio

I can use the Modern PM Castings Handbook in my work. Please send copy to:

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

Quantity
PRODUCTION
of
GREY IRON CASTINGS

*

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

*

ESTABLISHED 1866

THE WHELAND COMPANY

FOUNDRY DIVISION

MAIN OFFICE AND MANUFACTURING PLANTS

CHATTANOOGA 2, TENNESSEE

Design Digest

What's new in metalworking? You'll find plenty new in our newest editorial feature—Design Digest. It starts in this issue on page 156.

Gathered under one roof, so to speak, are the latest developments in the way of materials and components of interest to design engineers and metalworking management.

If you're looking for new ideas, a new material, or a new product that might help you solve a present or future problem, turn to Design Digest.

Pound of Car

There are plenty of convincing arguments that cars are too expensive. But you'll have a hard time convincing A. E. Kimberly, De Soto's chief engineer.

Pound for pound, he says, the average medium priced four-door sedan is an excellent buy at 72¢ a pound. He was particularly impressed, he said, when he discovered a new vacuum cleaner cost him $2.15 a pound—28 pounds for $60.

After some experimenting and much figuring he came up with these other figures: bicycle, 98¢ a pound; outboard motor, $3.45; aluminum boat, $3.13; power lawnmower, $1.13; table radio, $4.16; electric range, $1.26; refrigerator, $1.37; automatic washer, $1.03; dryer, $1.07; and an air conditioner, $1.85.

Puzzler

Guess we better report on the monkey - mother - length - of - rope - weight - of - rope - weight - of - monkey - weight - of - banana - weight - of - weight puzzler: The answer is that the banana is 5¾" long.

Winners: Jim Mull, The North American Manufacturing Company, Cleveland; Warren L. Klugman, Glascote Products, Inc., Euclid, Ohio; Andrew Korsnak & L. C. Mayer, United Screw & Bolt Corp., Cleveland; John Magner, Albert Kaack, Emil Novomesky, Wilson Hanna, of Curtiss - Wright Corp., Wood-Ridge, N. J.; Frank Van Ness, National Lead Co., St. Louis; Vunovic & Letterman, General Steel Castings, Granite City, Ill.; R. F. Herrera, Commercial Enameling Co., Los Angeles; J. G. Underwood, Algoma Steel Corp., Ltd., Sault Ste. Marie; Wm. B. Stafford, Massachusetts Engineering Co., N. Quincy, Mass.; Jules K. Hyman, Jos. Hyman & Sons, Phila.; Dick Hantzemoeder, Massey-Ferguson, Inc., Detroit; W. H. Fitzgerald, Bethlehem Steel Corp., Bethlehem, Pa.; Everett V. Angell, V. P. Red Seal Metals Co., South Gate, Calif.; T. Robb, Sault Ste. Marie; Arlan Walker, Iowa Ordnance Plt., Burlington, Iowa; Mrs. Kathleen Wollin, Great Western Steel Co., Milwaukee; N. J. Daugherty and Rose Marie Novak, Westinghouse Electric Corp., Pittsburgh; Arnold J. Hanson, Jr., Sls. Engr., Amay Steel Co., New York; Fred W. Hollenbach, Aro, Inc., Tullahoma, Tenn.

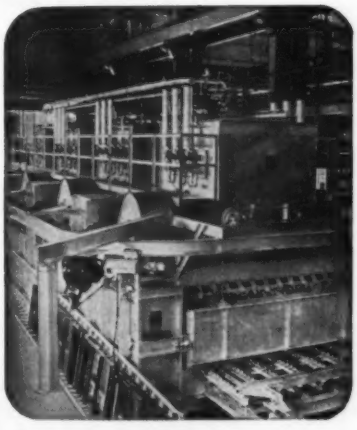
New Puzzler

Here's a good one from Mr. Angell, V. P. of Red Seal Metal Co.:

You are the general in charge of an airforce base with an unlimited number of airplanes at your command, with a range of one-half the circumference of the earth. Each airplane is equipped to receive or supply gasoline while in flight to other aircraft.

We will assume that the refueling is done instantaneously. What is the minimum number of airplanes required to encircle the globe?

HEAT TREATS ALUMINUM ALLOYS UNIFORMITY ±2°F.



R-S FURNACES AT WYMAN-GORDON KEEP QUALITY UP ... COSTS DOWN

Where aluminum alloy forgings for 18,000 ... 35,000 ... and 50,000 ton presses must be heat treated to absolute uniformity R-S Furnaces were entrusted with the job. Six R-S Furnaces at Wyman-Gordon Products Corporation handle all types and sizes of forgings with extreme flexibility and maintain a uniformity of plus or minus 2° F. to 1100° F. Work is pushed thru furnace in steel trays in two rows on roller rails. Every piece emerging has absolute uniformity regardless of size, shape or weight.

For higher quality in heating and forging write for the illustrated folder giving full technical details to...

R-S FURNACE CO., INC.
NORTH WALES, PA.

IHEA

Car Hearth Furnaces
Continuous Furnaces
Rotary Type Furnaces

R-S FURNACES

Missing Something?

The Answer is Pink!

Switch to PINK CIMCOOL

Yes, if you're missing that extra something in *your* shop, try CIMCOOL for metal cutting jobs. The famous CIMCOOL° family of cutting fluids covers every job, every type of work and metal. Discover how the famous pink cutting fluid can lower costs and increase production in your plant.

Here are three reasons why CIMCOOL has become the largest selling chemical cutting fluid in the world:

CIMCOOL LOWERS COSTS because it's longer lasting in machines. Therefore, it reduces downtime and cuts labor costs for cleaning and changing.

CIMCOOL PERMITS FASTER SPEEDS and feeds, because of its chemical lubricity. It combines friction reduction and cooling capacity in a degree never before attained by old fashioned lubricants.

CIMCOOL IS CLEANER TO USE because it doesn't soil hands or clothing. It contains no skin irritants. And it's safer because it leaves no slippery film on shoes, floor, machine or work. It can't smoke, can't burn, and virtually eliminates rancidity and foul odors.

So don't keep things *under* your hat . . . call your CIMCOOL Distributor today. He'll be glad to give you full information on all the advantages of CIMCOOL Concentrate—as well as details on the entire family of CIMCOOL Cutting Fluids. YOU may be missing something!

Or contact us direct and we'll have one of our Cincinnati Milling trained machinists call on you—without cost or obligation, of course. Write, wire or telephone, Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

CIMCOOL CUTTING FLUIDS

CIMCOOL 52 Concentrate—The famous pink fluid which still covers 85% of all metal cutting jobs. Effective, economical and clean.

CIMPLUS—The transparent grinding fluid with exceptional rust control. Also used for machining cast iron and as a water conditioner with CIMCOOL Concentrate.

CIMCUT Concentrates (AA, NC, SS)—For jobs requiring oil-base cutting fluids. Added to mineral oils, they give economical mixes for higher speeds and feeds.

CIMCOOL Tapping Compound—Permits the use of highest tapping speeds and increases tap life amazingly.

Also, CIMCOOL Bactericide and CIMCOOL Machine Cleaner.

for 100% of all metal cutting jobs. The Answer is Pink!

Production-proved products of The Cincinnati Milling Machine Co.

° Trade Mark Reg. U.S. Pat. Off.

COMING EXHIBITS

Ornamental Iron Trade Show—Jan. 8-10, Atlanta Biltmore Hotel, Atlanta, Ga. (National Ornamental Iron Mfrs. Assn., 1977 College Ave., N. E., Atlanta, Ga.)

Plant Maintenance & Engineering Show—Jan. 26-29, Public Auditorium, Cleveland. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

International Heating and Air Conditioning Show—Jan. 26-29, Convention Hall, Philadelphia. (International Exposition Co., 480 Lexington Ave., New York 17.)

Western Metal Show — March 16-20, Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Corrosion Show — March 16-20, Chicago. (National Assn. of Corrosion Engineers, 1061 M & M Bldg., Houston 2, Texas.)

Industrial Finishing Show — June 15-19, Detroit Artillery Armory, Detroit. (Information: H. J. McAleer, 3171 Bellevue, Detroit 7, Mich.)

MEETINGS

DECEMBER

American Institute of Chemical Engineers—Annual meeting, Dec. 7-10, Netherland Hilton Hotel, Cincinnati. Society headquarters, 25 W. 45th St., New York.

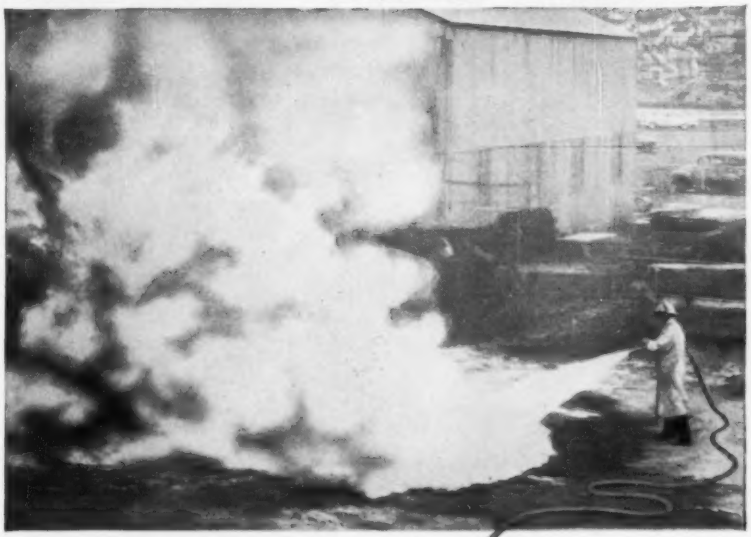
The Material Handling Institute, Inc.—Annual membership meeting, Dec. 10, Hotel Roosevelt, New York. Society headquarters, One Gateway Center, Pittsburgh.

JANUARY

Aluminum Window Mfrs. Assn.—Winter meeting, Jan. 7-8, Key Biscayne Hotel, Miami, Fla. Society

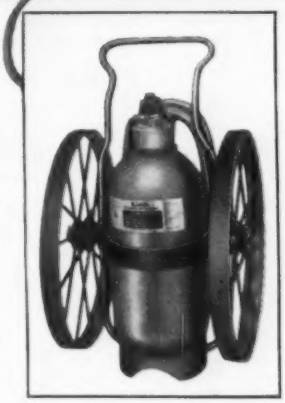
(Continued on P. 16)

NEW! FOR FIGHTING LIQUID FIRES!



ONE-MAN DRY CHEMICAL KILLS MORE FIRE FASTER!

This new Kidde 200-pound pressurized unit has an *extra* 50 pounds of fire-smothering dry chemical, is designed for faster, easier operation. Its 40-foot stream gives more efficient extinguishing action, greater heat protection for the operator! No valves to unscrew, no wait for pressure, no pressure reducer to cause you trouble. Just remove safety pin, flip valve toggle, turn on nozzle lever. No conventional seal. Its exclusive Bridgeman seal holds pressure by using 450 psi to exert a *three-ton* sealing force.



COMPLETELY NEW DRY CHEMICAL LINE GIVES FASTER, EASIER OPERATION!

On the left, the new Kidde 20-pound dry chemical portable – completely new, completely better. The simplest, most efficient dry chemical portable on the market. Features include oversize aluminum handle for gloved-hand operation, perfect balance for faster action, simple one-two operation. Remove horn, pull trigger, and fire's out. Rugged, dustproof pressure gauge is recessed for protection. 10, 20- and 30-pound Kidde portables pressurized at 225-250 psi. Coming soon——new 2½- and 5-lb. models charged at 140-160 psi. Write today for information about this new Kidde line!

Kidde

Walter Kidde & Company, Inc.
1249 Main St., Belleville 9, N.J.
Walter Kidde & Company of Canada Ltd.
Montreal—Toronto—Vancouver

1 **DRAWS** entry wire to accurate size through carbide dies

2 **FLATTENS** wire in precision 8" mill with water cooled carbide rolls

3 **SIZES AND EDGES SIZES AND SHAPES** in versatile Turks Head

4 **GAGES** thickness with P & W electro-limit gege

5 **BUNDLES** traverse wound coils, traverse wound spools, loose coils.

PRICE UNDER $35,000 **DELIVERY 10 WEEKS**

Here is the new Fenn 5-in-1 Wire Line with a price as remarkable as its performance and compactness. It will produce precisely flattened or shaped, edged, and sized bundles at speeds up to 600 FPM in an absolute minimum of floor space. Inlet capacity up to ⅜" diameter. The Precision Fenn 8" Roller Bearing Rolling Mill has carbide shell rolls with internal and external cooling. The entire line operates from a single, infinitely variable speed AC motor with simple electric controls. The 5-in-1 Wire Line is engineered and built to Fenn quality standards. Write for complete specifications.

THE FENN MANUFACTURING COMPANY · 306 FENN ROAD · NEWINGTON, CONN.

EXHIBITS, MEETINGS

(Continued from P. 15)

headquarters, 75 West St., New York 6.

Institute of Scrap Iron & Steel, Inc.—Annual convention, Jan. 11-14, The Waldorf Astoria, New York. Institute headquarters, 1729 "H" St., N. W., Washington, D. C.

Society of Automotive Engineers—Annual meeting and engineering display, Jan. 12-16, Sheraton-Cadillac and Hotel Statler, Detroit. Society headquarters, 485 Lexington Ave., New York 17.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 19-20, Cleveland. Society headquarters, 1145 19th St., N. W., Washington 6, D. C.

Steel Kitchen Cabinet Mfrs. Assn.—Winter meeting, Jan. 20, Blackstone Hotel, Chicago. Association headquarters, 1008 Engineers Bldg., Cleveland.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 20-21, St. Regis Hotel, New York. Society headquarters, 600 Fifth Ave., New York 20.

The American Boiler Mfrs. Assn.—Mid-winter meeting, Jan. 22, Statler Hotel, Cleveland. Society headquarters, 4062 Mayfield Rd., Cleveland 21.

Hoist Manufacturers Assn.—Annual meeting, Jan. 22, Palm Beach Biltmore, Palm Beach, Fla. Association headquarters, One Thomas Circle, Washington 5, D. C.

Truck Trailer Manufacturers Assn.—Annual convention, Jan. 26-28, Hollywood Beach Hotel, Hollywood, Fla. Association headquarters, 710 Albee Bldg., Washington 5, D. C.

Society of Plastic Engineers, Inc.—Annual technical conference, Jan. 27-30, Hotel Commodore, New York. Society headquarters, 65 Prospect St., Stamford, Conn.

ANNOUNCING

the Newest Source of Quality Stainless Sheet and Strip in the Industry

J & L's Completely New Stainless Mill . . .

designed and engineered to give you the fastest delivery on Quality Stainless Sheet and Strip

Now you can demand the quality you need and get the service you want from the most advanced stainless steel sheet and strip source in the industry. J & L's new Sendzimir Mill at Louisville, Ohio, is the result of years of planning by specialists to provide a new facility of such perfection that yield of the highest quality is assured.

J & L can now offer stainless sheet and strip to the most exacting specifications, producing stainless sheets to extremely close tolerances in widths up to 48 inches.

By efficient, flexible scheduling and adequate inventory support, J & L offers stainless steel buyers everywhere the fastest possible service.

▲ Coil Preparation Line for Incoming Hot Rolled Sheet

▲ The 54" Temper Mill

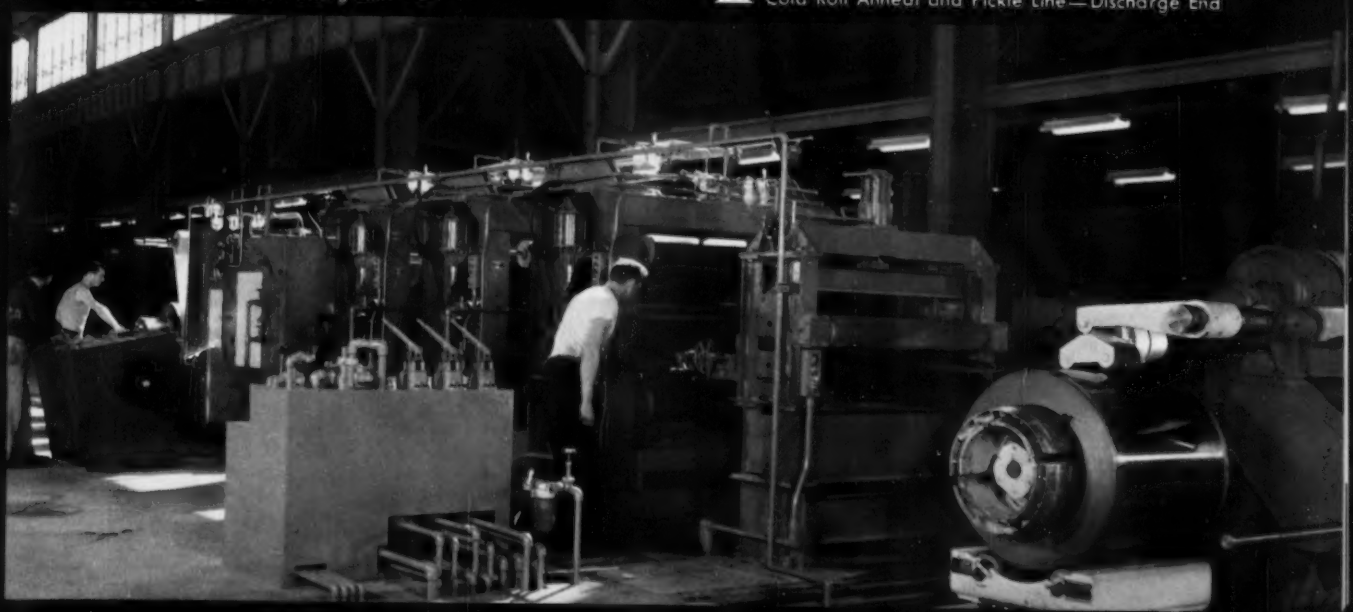
▼ Hot Anneal Furnace—Entry End

▲ The Sendzimir Mill

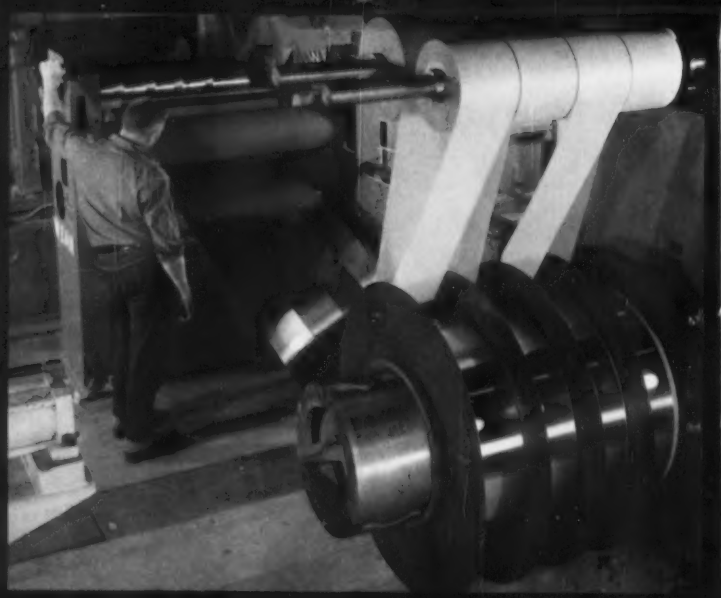
Interior View of the Intricate Mechanism of the Sendzimir Mill ▶

Scouring and Scrubbing Line ▼

▲ Cold Roll Anneal and Pickle Line—Discharge End

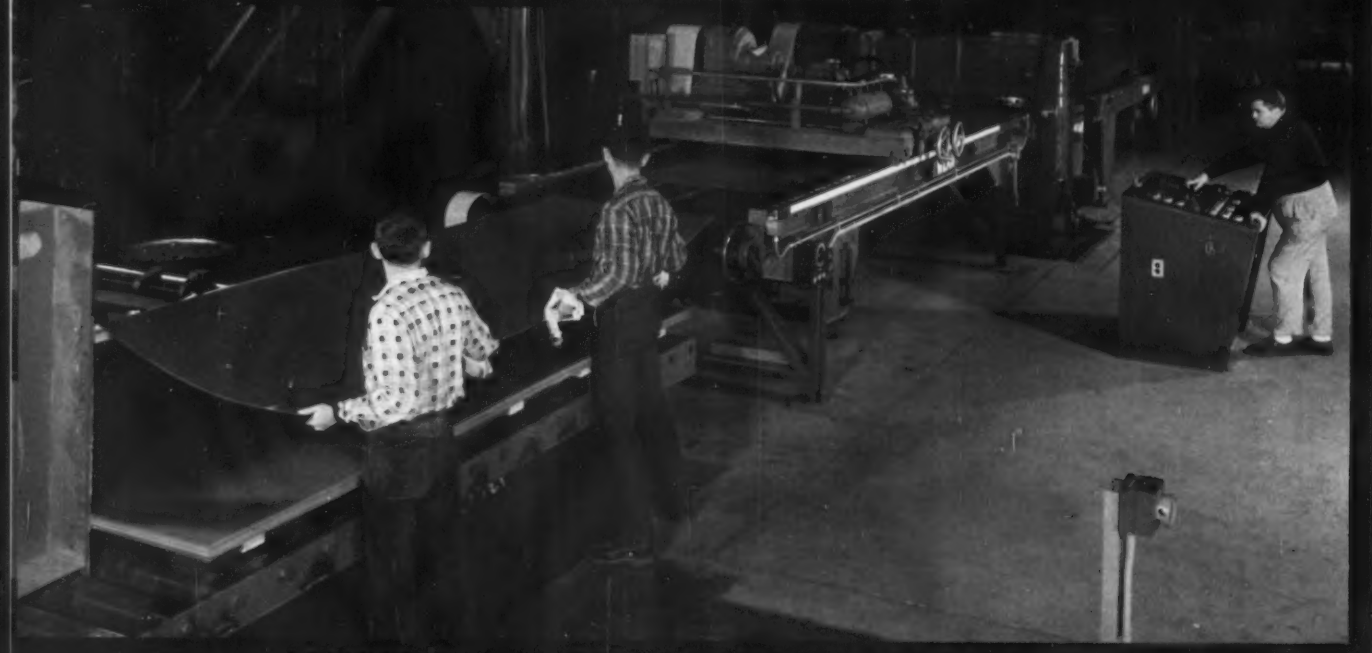


Surface Checking the 50" Slitter



The 50" Slitter. One of Three Slitting Lines for Cutting Coil into Strip

One of the two Shear-to-Length Lines for Cutting Coils into Specified Sheet Lengths



STAINLESS and STRIP DIVISION DISTRICT SALES OFFICES

Write for your copy of the J & L Stainless Steel Sheet and Strip Manual today.

CHICAGO
4010 West Madison Street
Chicago 24, Illinois

EASTERN
Raymond Commerce Building
1180 Raymond Boulevard
Newark 2, New Jersey

LOS ANGELES
Continental National Group Building
2975 Wilshire Boulevard
Los Angeles 5, California

CLEVELAND
The B. F. Keith Building
1621 Euclid
Cleveland 15, Ohio

HOUSTON
Adams Petroleum Center
6910 Fannin
Houston 25, Texas

DETROIT
12301 Hubbell Avenue
Detroit 27, Michigan

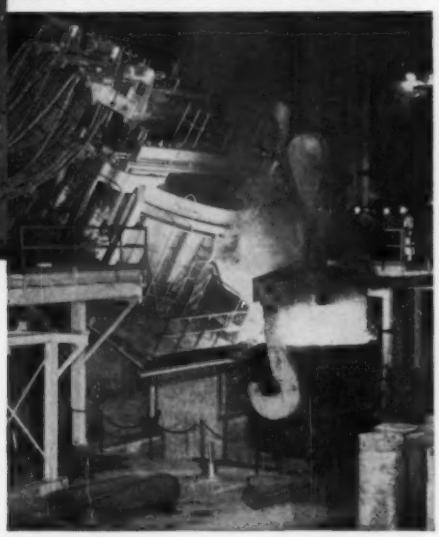
INDIANAPOLIS
2301 South Holt Road
Indianapolis 41, Indiana

J&L STEEL STAINLESS
BAR • WIRE • SHEET • STRIP

Jones & Laughlin Steel Corporation · **STAINLESS and STRIP DIVISION** · **Box 4606, Detroit 34**

LITHO USA

Lectromelt's smooth-operating hydraulic mechanism assures rapid, accurate forward tilting for pouring, backward tilting for slag-off.



LECTROMELT FURNACES

replace open hearths...

increase ingot capacity 70%

...lower production costs

Two new 100-ton Lectromelt furnaces . . . largest electric-arc furnaces in the eleven western states . . . recently replaced gas-fired and oil-fired open hearths in a leading West Coast steel mill.

Now, a heat takes 4½ hours or less from the time the first scrap steel is placed in the furnace until the molten steel is ready to pour. Each Lectromelt furnace produces an average of 25 tons of ingots per hour. Capacity of the plant has been boosted from 246,000 to an estimated 420,000 ingot tons per year.

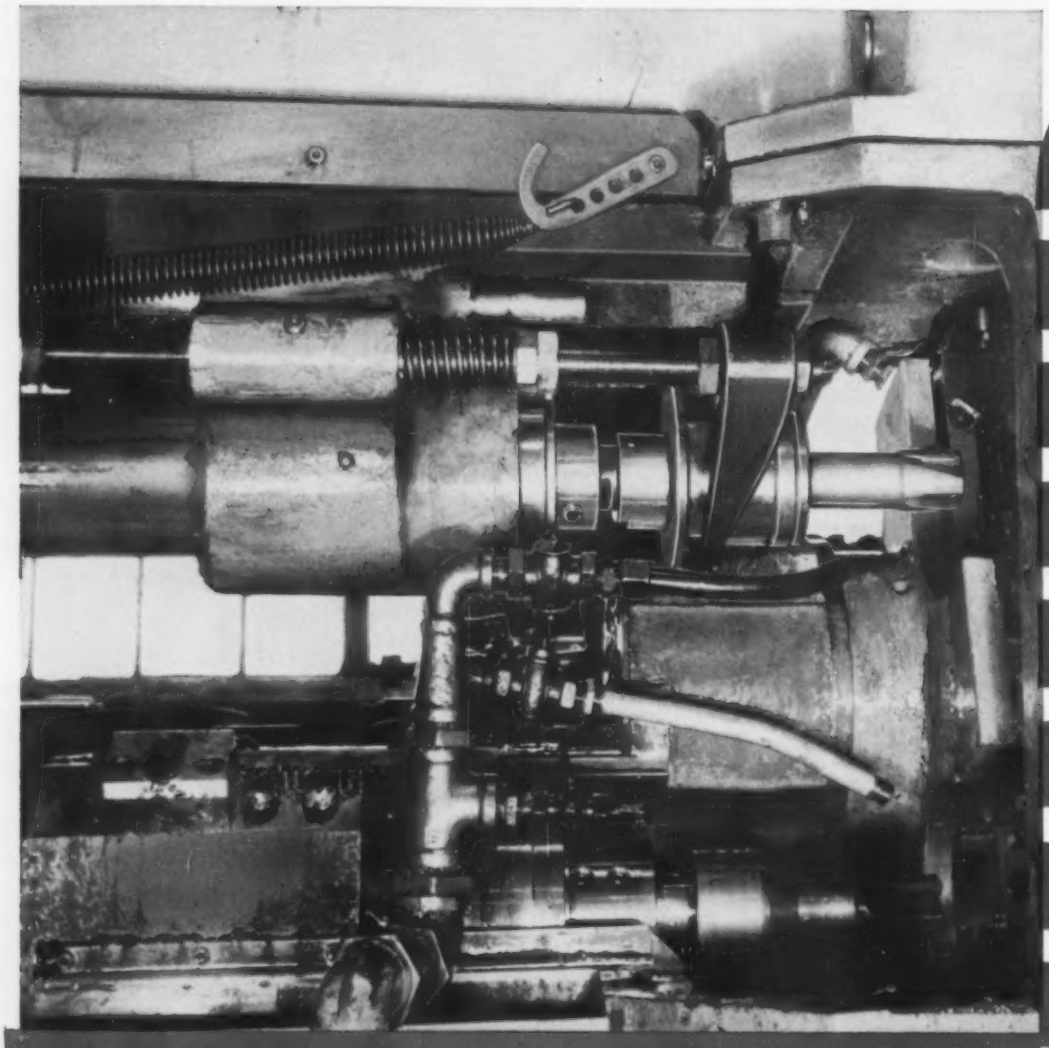
Top-charging Lectromelt furnaces are increasing metal-producing capacity all over the world. Users report higher tonnage per man-hour, lower power consumption, savings in electrodes and refractories. Precise control possible with Lectromelt furnaces contributes to greater uniformity and more accurate alloying of metals.

For complete technical data—ask for a copy of Catalog 10. Write Lectromelt Furnace Division, McGraw-Edison Company, 312 32nd Street, Pittsburgh 30, Pa.

McGRAW-EDISON

Lectromelt®

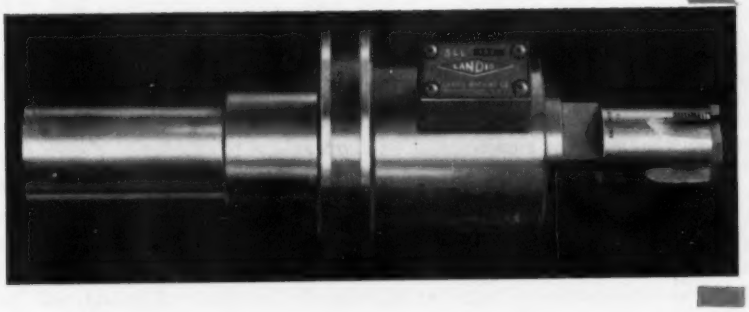
CANADA: Canefco Limited, Toronto . . . ARGENTINA: Master Argentina, Buenos Aires . . . ITALY: Forni Stein, Genova . . . ENGLAND: Electric Furnace Co., Ltd., Weybridge . . . GERMANY: Demag-Elektrometallurgie, GmbH, Duisburg . . . SPAIN: General Electrica Espanola, Bilbao . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S.A. Stein & Roubaix, Bressoux-Liege . . . JAPAN: Daido Steel Company, Ltd., Nagoya



LANDIS TAP

for bar automatics...

3000 pieces between grinds at 140 SFM



A LANDIS, Rotary Style, Collapsible Tap is giving excellent chaser life producing taper threads during high-speed machining runs at the Grabler Manufacturing Co., Cleveland, Ohio.

The 2LL Tap, equipped with a 1½" extra long head; is shown installed in the right-hand third position on a New Britain Automatic machining 350 malleable iron union bodies per hour. Though threading at the high speed of 140 SFM, 3000 1½" 11½ pitch NPT threads are produced between chaser grinds.

LANDIS LL Receding Chaser Collapsible Taps, designed especially for taper threading, feature a receding action that contributes to excellent chaser life. A precision mechanism diametrically recedes the chasers during threading at a rate equal to the desired thread taper. This reduces cutting strains by restricting cutting action to the throat or chamfer section, and provides longer chaser life between grinds. An important additional feature of this receding action is the generation of a truly conical taper thread with no chaser leave off marks.

LL Taps can be furnished for rotary or stationary applications from 1$\frac{5}{16}$" to 20" in diameter . . . the 2LL illustrated here, using 5 different Tap Heads, will thread all pipe diameters from 1" to 2½". For more details, write for Bulletin G-95 . . . perhaps your plant has an internal taper problem that may be simplified by a LANDIS LL Collapsible Tap.

505C

LANDIS *Machine* COMPANY

WAYNESBORO • PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT • CUTTING • TAPPING • GRINDING • ROLLING

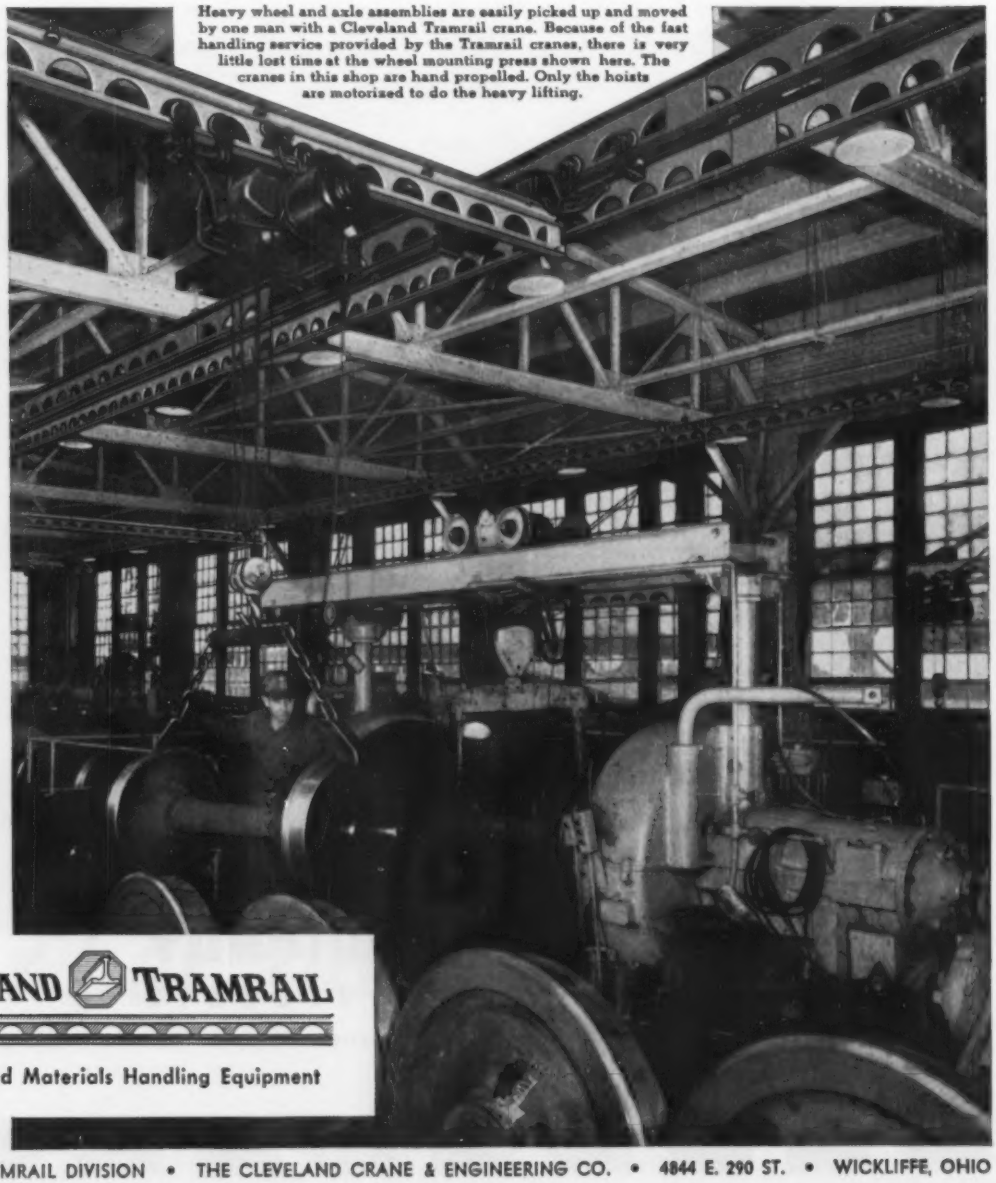
Top Efficiency In Servicing Wheels And Axles

A Proven Idea for Making Large Railroad Savings

RAILROADS can make big savings in the servicing of wheels and axles by centralizing operations, doing the work in a few larger well equipped plants rather than in many small scattered shops.

Such plants can effect tremendous savings when provided with modern machinery and materials handling equipment. A large railroad combined its wheel and axle operations in a strategically located plant that was designed for the purpose, and thereby brought about a time reduction so large that it amortized the cost of the entire project in five years.

Now, more than ever, operating costs are of paramount interest to railroads. Because of experience with many railroad installations, we believe consolidated wheel and axle shops offer an important area for making large savings. Cleveland Tramrail sales engineers, located throughout the United States and Canada, will be glad to go into details.



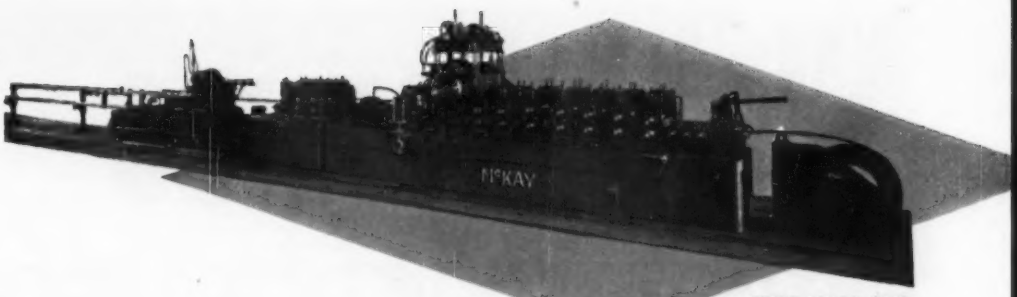
Heavy wheel and axle assemblies are easily picked up and moved by one man with a Cleveland Tramrail crane. Because of the fast handling service provided by the Tramrail cranes, there is very little lost time at the wheel mounting press shown here. The cranes in this shop are hand propelled. Only the hoists are motorized to do the heavy lifting.

Write for free Engineering and Application Booklet No. 2008. Packed with valuable information.

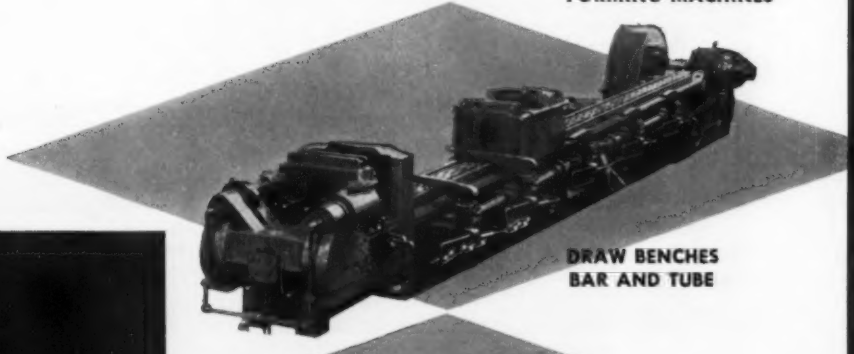
CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

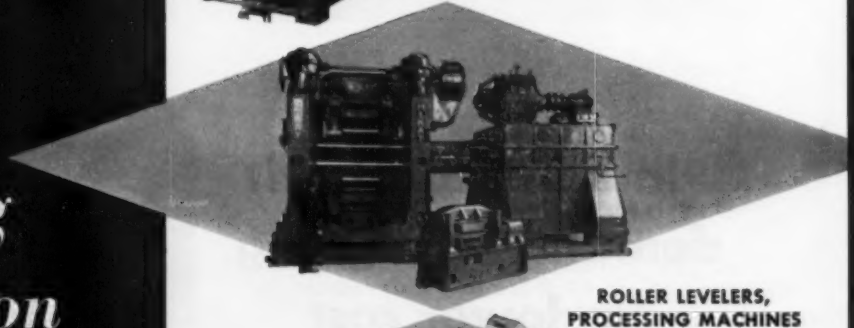
CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 4844 E. 290 ST. • WICKLIFFE, OHIO



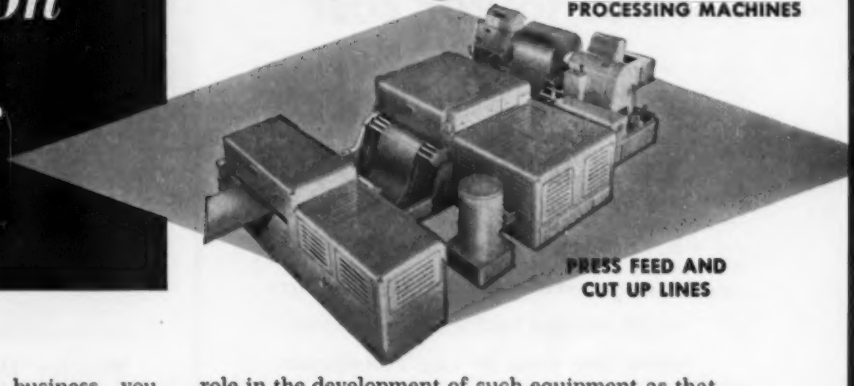
TUBE MILLS AND
FORMING MACHINES



DRAW BENCHES
BAR AND TUBE



ROLLER LEVELERS,
PROCESSING MACHINES



PRESS FEED AND
CUT UP LINES

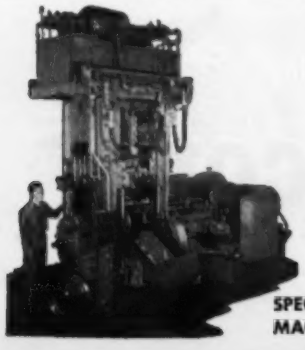
Metal working Automation in action...

If you're in the metal working business, you should be acquainted with McKay *automated* lines available for many metal working operations.

McKay pioneered and has played a leading role in the development of such equipment as that pictured on this page.

Basic McKay designs can be modified, or special machines developed to meet specific requirements.

THE McKAY MACHINE CO., YOUNGSTOWN, OHIO

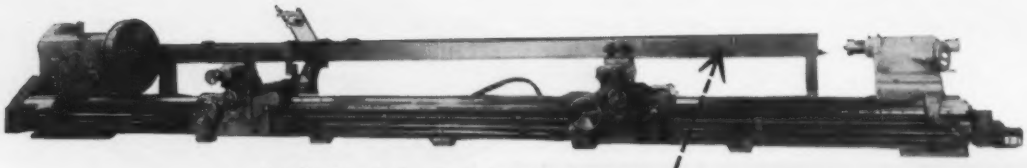


SPECIAL
MACHINERY

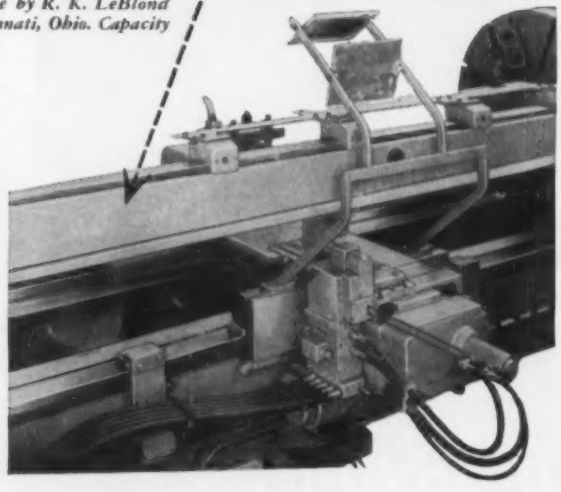
McK

Weldynamics

ARC WELDING AT WORK CUTTING COSTS



Duplicating lathe made by R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. Capacity 37' between centers.



Planning for profit demands designing for lower cost

WELDYNAMICS lets you use steel and save. For example, because this lathe template rail is made of welded steel, it is 24% more rigid, weighs 54.6% less, and costs a third less than its cast counterpart. It was also simpler to design, and easier to fabricate and machine.

How you can use Weldynamics

Lincoln men, expert in Weldynamics, will help you. They offer the best in technical advice on design, procedures, equipment and electrodes.

Write for "Design Ideas", tips on designing for welded steel, sent at no cost to designers.

The World's Largest Manufacturer of Arc Welding Equipment

LINCOLN

© 1958 The Lincoln Electric Company

THE LINCOLN ELECTRIC COMPANY, DEPT. 1549, CLEVELAND 17, OHIO

Project Alert Working at UDYLITE *Produces for You...*

SILICON EFFICIENCY, RUGGEDNESS AND LONG LIFE

for old rectifiers

1. **A SPECIAL PRODUCT . . .** For the first time, a Udylite-engineered, Udylite-built *silicon* replacement stack is offered for you to use in revitalizing your Udylite magnesium-copper-sulphide or selenium rectifier and upgrading its performance to the level of today's best. *And you can do this in your own shop*, without delay, at a minimum of expense and down time.

2. **A SPECIAL SERVICE . . .** As an alternate plan, your old rectifier can be returned to Udylite for *factory* installation of the silicon replacement stacks by trained rectifier specialists. At the same time, your rectifier will be completely overhauled and tested so that it will be returned to you renewed and ready for the longer life and high efficiency of Udylite silicon.

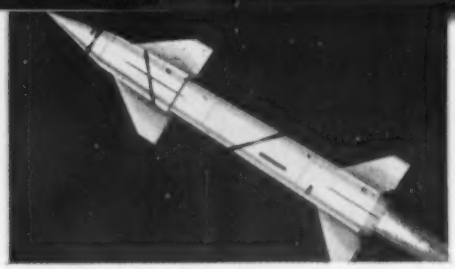
3. **A SPECIAL VALUE . . .** This whole program is set up as a Project Alert. A special department will handle your order and your equipment from start to a completely satisfactory finish. A *guaranteed delivery* will keep your down time to a minimum. With prices based on a production line plan, you will get more value per dollar spent than you ever before thought possible.

Let Udylite help you get your entire plating operation in top working order and ready to go at peak capacity. Your Udylite sales engineer will be calling on you soon. But if you need priority service, write, phone or wire directly to:

the **udylite** corporation

detroit 11, michigan • world's largest plating supplier

PROJECT ALERT



predictable performer . . .

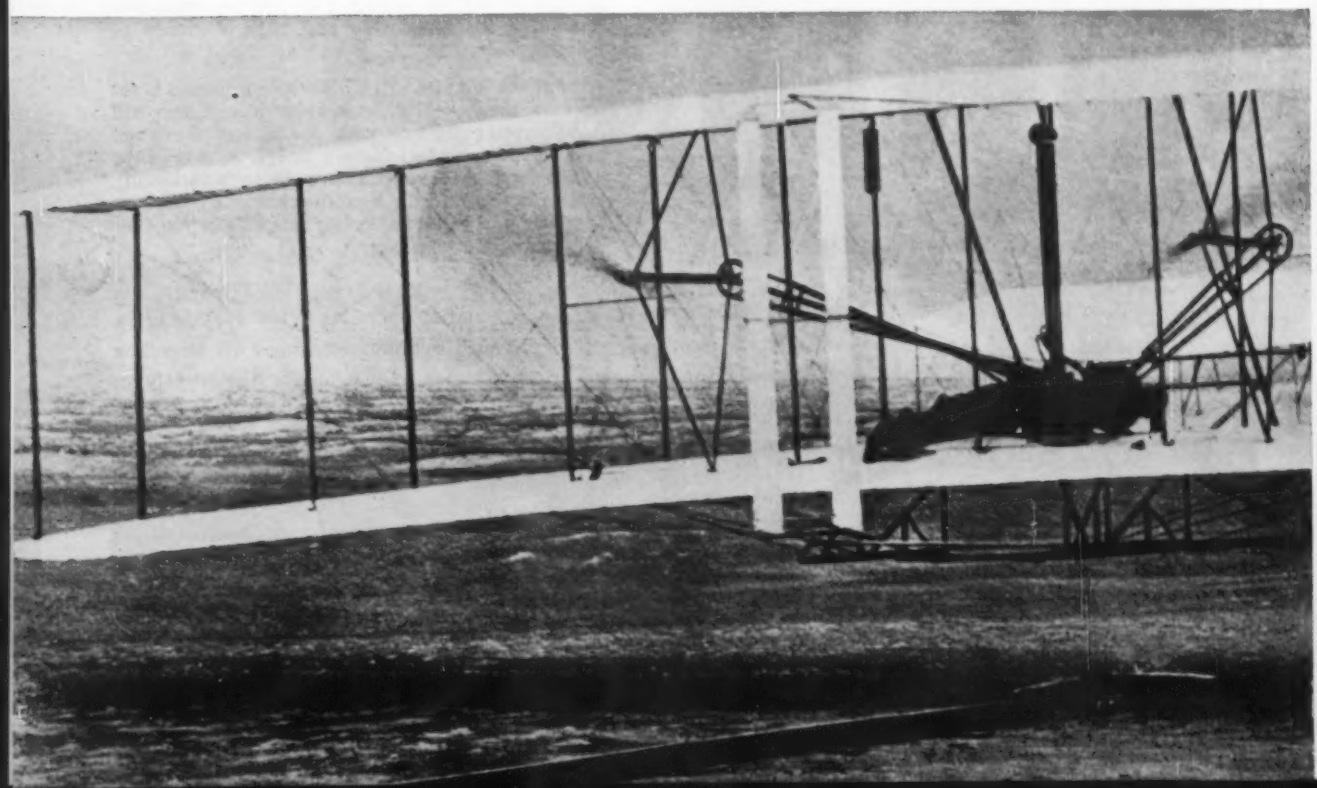
. . . but few believed it until Wilbur and Orville Wright proved it in 1910. Later, Lindbergh—staking his life on the same *predictable performance* first proved possible by the Wrights—flew alone, non-stop across the Atlantic.

The answer in both cases . . . and still the best answer for today's mighty jets and star-bound missiles . . . vital aircraft components made from uniform, dependable *Carpenter steels.*

The secret of *predictable performance* is in absolute and precise quality control . . . controls first developed in *Carpenter* Laboratories that are now standards for the industry: the Torsion Impact Test, Acid Disc Inspection, Cone Test, the Tough Timbre Test . . . to name a few.

Today, the *Carpenter* MEL-TROL® process—a unique control that utilizes a new, patented ingot mold design—produces steels that approach the ultimate in *predictable performance.*

With this leadership in quality—goes the responsibility of meeting constantly growing demands of the atomic age—more stainless, more tool steels, more specialty alloys. For a company whose history was based on *quality* rather than *quantity*, this was quite a challenge.



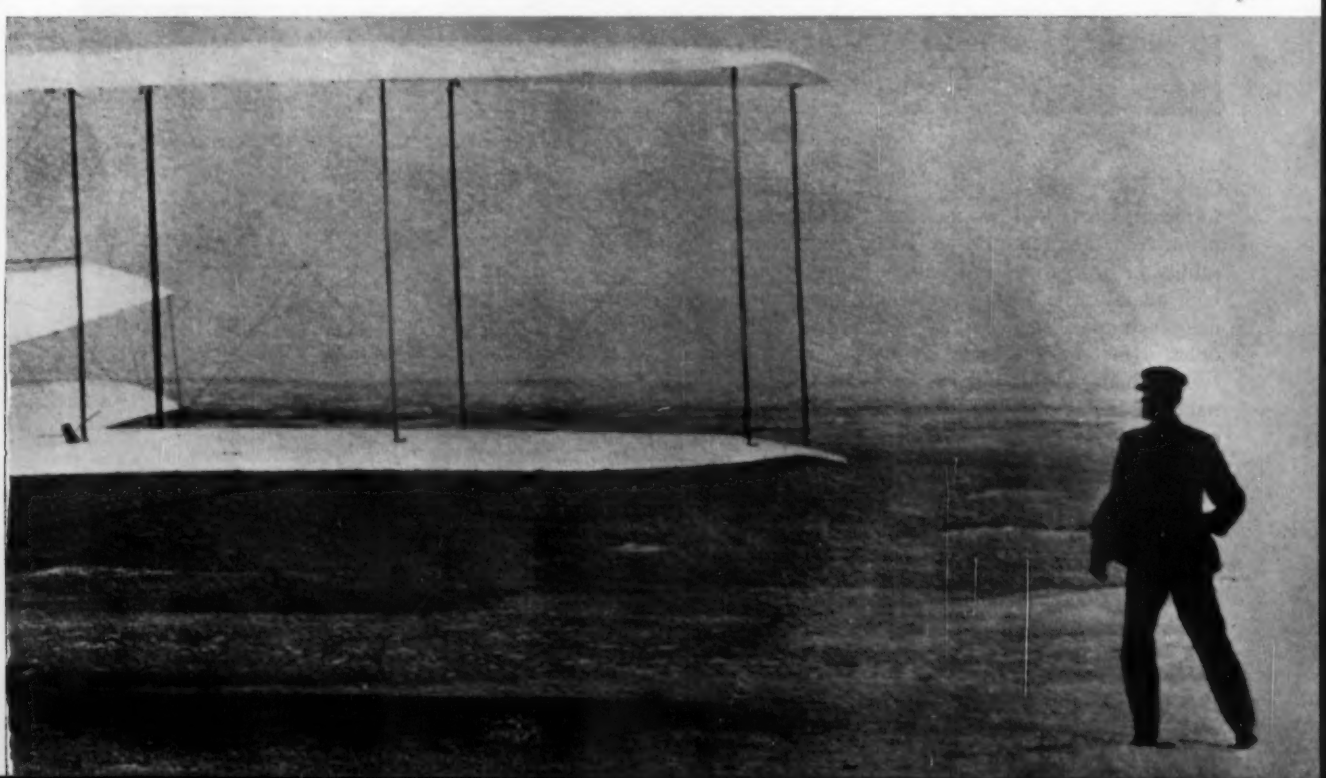
To meet it, *Carpenter* has *doubled its ingot tonnage capacity within the past year* through the acquisition of steelmaking facilities in Bridgeport, Connecticut. New furnaces, mills and finishers—all completely equipped with precise *Carpenter* quality controls—began operation. And capacity—mass production of *predictable performance* specialty steels—is an established fact.

In the years ahead, *Carpenter* will continue to lead the way in quality, and grow apace of industry's ever-increasing demands for the world's finest steels.

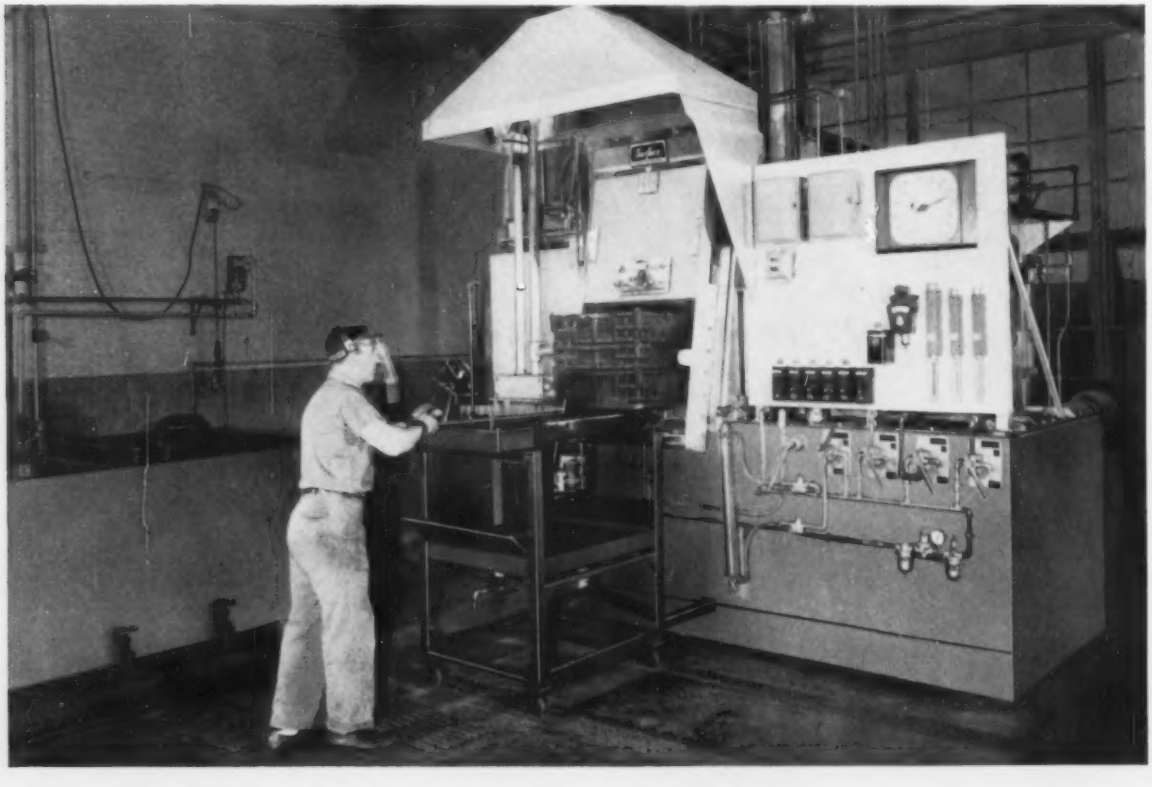
tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

Carpenter steel

The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.



Allcase® furnace clips cost ½ on manicuring implements



One man and one furnace now match the former production of two men and two furnaces in this plant. Added to this gain are two others: greater versatility in processing, and finished work of uniformly high quality. The latter is especially important to this manufacturer of manicuring implements, because he offers a lifetime guarantee on many of his products.

The "hero" of this story is the Surface Allcase® furnace, which is used for hardening, carbonitriding, carburizing, and annealing. Controlled atmosphere is supplied by a Surface MRX® gas generator. Work handling and atmosphere control can be completely automatic, if you wish. Why don't you find out about this profitable furnace now?

Write for Bulletins SC-163 and SC-174.

Surface Combustion Corporation, 2373 Dorr St., Toledo 1, Ohio. In Canada: Surface Industrial Furnaces, Ltd., Toronto, Ontario.

Surface

wherever heat is used in industry

WAGNER INDUSTRIAL BRAKES . . . THE CHOICE OF LEADERS IN INDUSTRY

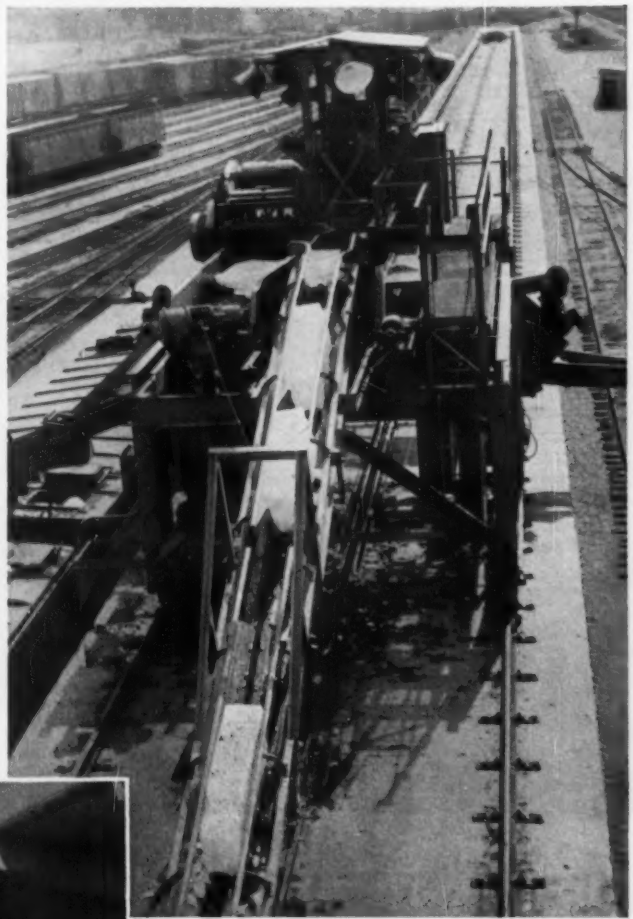
BRAKING THE ICER

Link Belt dock-type car icer uses Wagner Brake System for safe sure stops

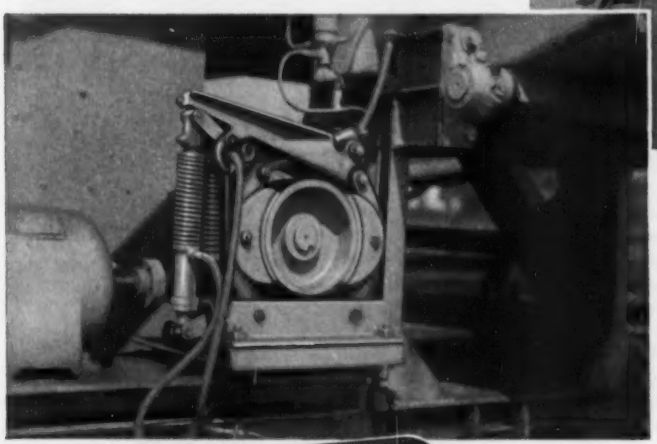
The Link-Belt self-propelled refrigerator car icer at Chicago Great Western Railway's shops at Oelwein, Iowa travels along its own track on an elevated dock. It scoops 300 lb. blocks of ice as they are chain-conveyed along the dock, reduces them to sized ice which it discharges into refrigerator cars on either or both sides of the dock at the rate of 1½ to 2 minutes per car.

This machine is equipped with a Wagner Hydraulic Braking System, which permits fast, sure positioning of the icer.

Like this labor-saving icer, perhaps some of your equipment has specialized braking requirements. If so, your nearby Wagner Sales Engineer will be glad to show you how Wagner Industrial Braking Systems can help you. Call the nearest of our 32 branch offices, or write for Bulletin IU-226.



This mobile "filling station" for refrigerator cars re-ices them as soon as they arrive at Oelwein, Iowa, hub of Chicago Great Western Railway's operations, to speed delivery of perishable food to its destination.



Wagner Type HM 10 x 4 double bridge, double braking station installed on the Link-Belt icer.

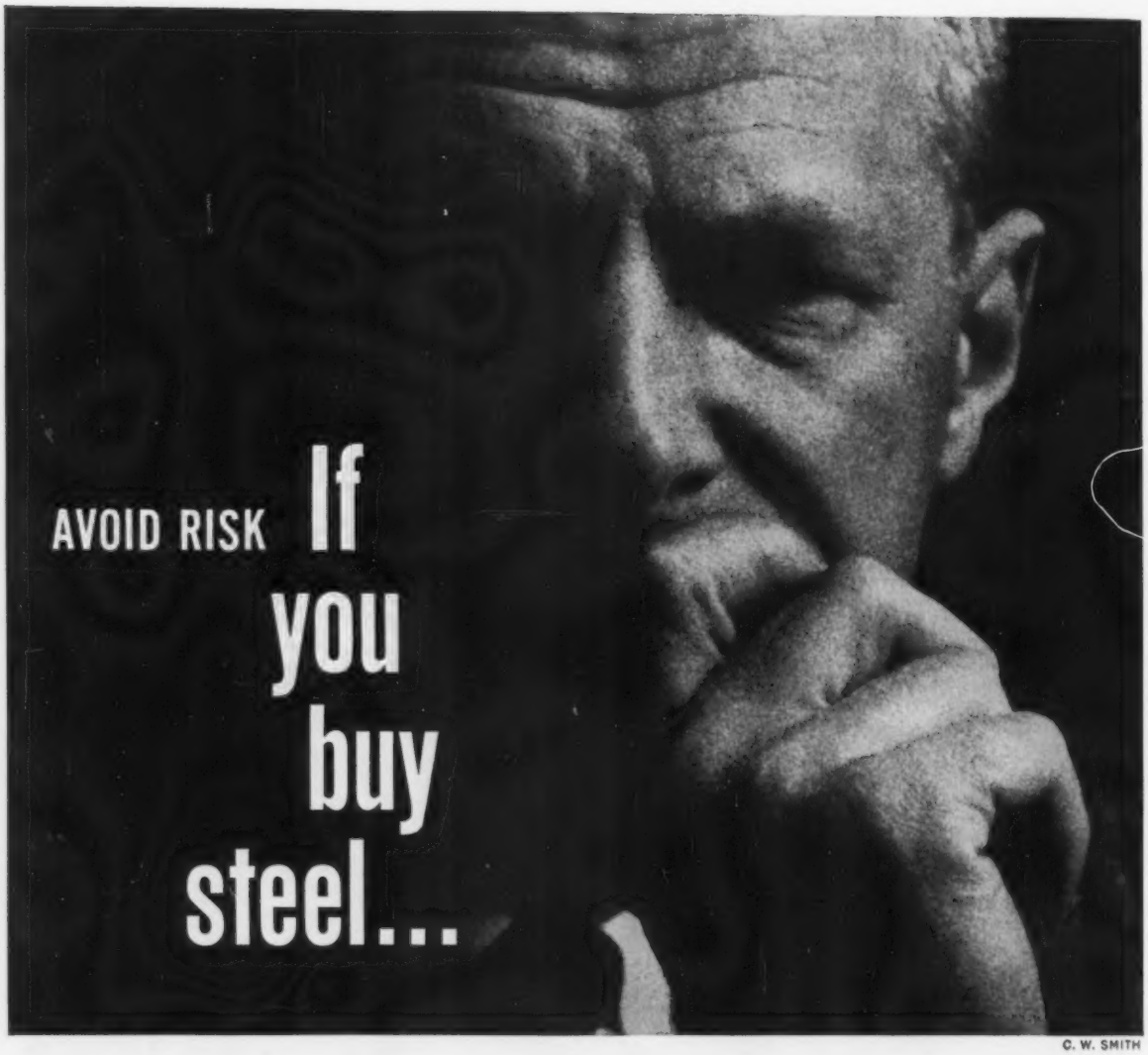
W158-1

Wagner Electric Corporation
SERVING INDUSTRY SINCE 1891

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

Wagner Electric Corporation
6403 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC



C. W. SMITH

USE OUR INVENTORY to continue your cost-reduction program

When business slows down, you get tough, tighten your belt, and cut back steel inventory because you free capital that way and save on costs of space, handling, taxes, obsolescence and wastage. You avoid big-inventory risks by buying from a Steel Service Center. That's good business.

But when business speeds up again, do you soften and let these economies—plus your protection from risk—go out the window?

Doesn't it make sense to *continue* your cost-reduction program? Why not continue free-of-risk steel buying from your Steel Service Center . . . get all the steel you need delivered when you say, cut to exact size and ready for use.

Compare all your costs of inventoried steel with what our steel will cost you. Use the chart at the right. Or get the booklet *What's Your Real Cost of Possession for Steel*? from your nearby Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	_____
Cost of capital:	
Inventory	_____
Space	_____
Equipment	_____
Cost of operation:	
Space	_____
Material handling	_____
Cutting & burning	_____
Scrap & wastage	_____
Other costs:	
Obsolescence	_____
Insurance	_____
Taxes	_____
Accounting	_____
TOTAL	_____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered

TOTAL _____

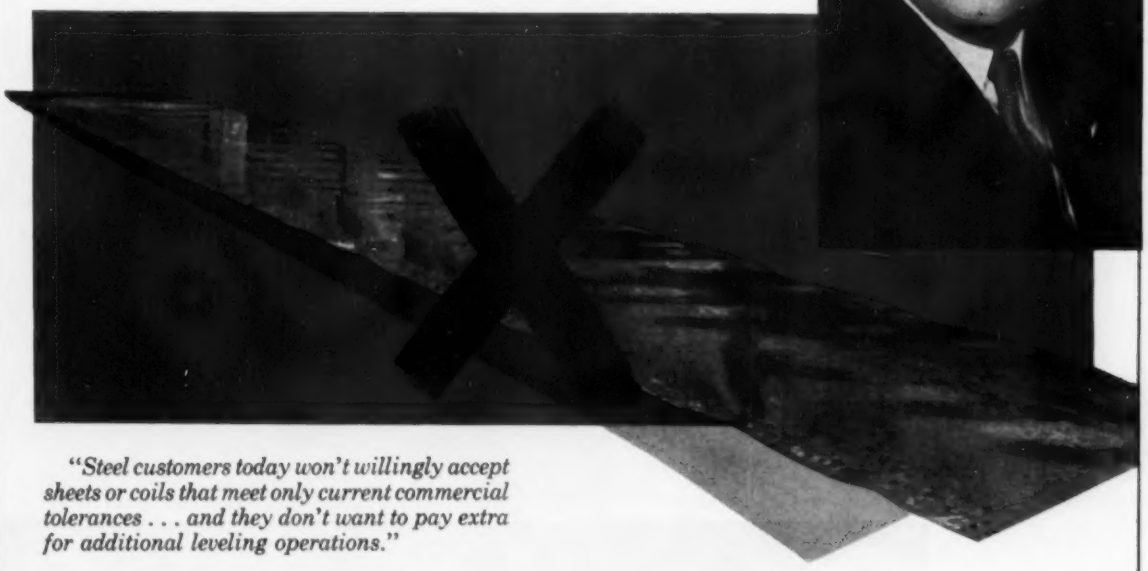
AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

...YOUR STEEL SERVICE CENTER

"Today's commercial standards of flatness are obsolete"

Says Wm. H. Rose, President of Voss Engineering Company



"Steel customers today won't willingly accept sheets or coils that meet only current commercial tolerances . . . and they don't want to pay extra for additional leveling operations."

Raise your flatness far above commercial standards with a Voss Inverted Roller Leveler. Voss gives precision leveling at high production speeds. Successfully in use on continuous coil lines producing over 1000 tons daily, Voss Levelers equal or exceed stretcher-level flatness in most hot or cold-rolled applications, and impart high non-fluting properties to galvanized steel.

Let us demonstrate the Voss-patented features that assure you precise area control and trouble-free operation. You can enjoy the advantages which leading steel and non-ferrous metal producers (including producers of high-tensile missile materials!) are obtaining with Voss Roller Levelers. Write today for booklet and list of users.

Voss ENGINEERING CO.

7301 Penn Ave. Pittsburgh 8, Pa. Churchill 2-4422

Can a better spring save you money?

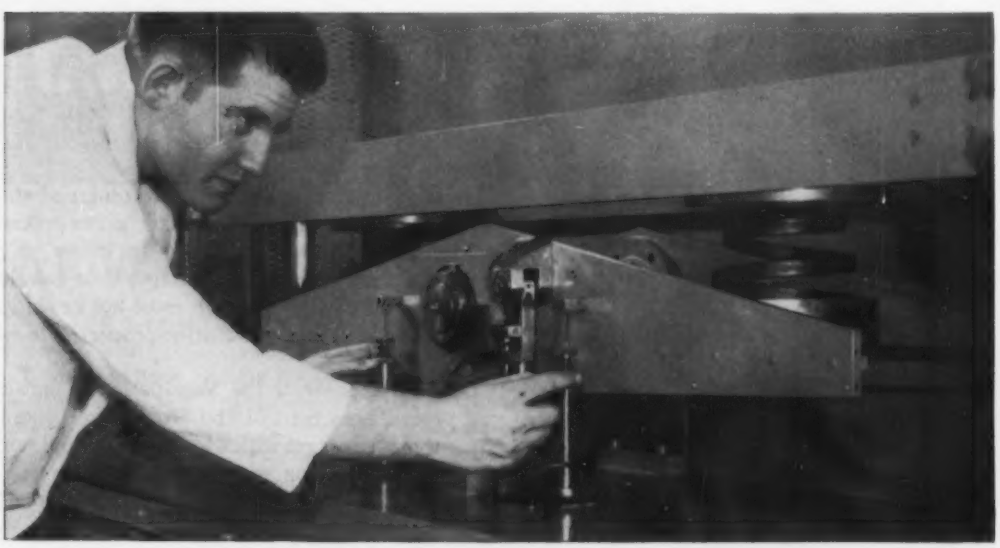
. . . then put American Spring Engineering Research Service to work for you!

WOULD you like the springs you now use to last longer? Would you like to cut their cost? Do you need design assistance on a difficult new spring application? *American Steel & Wire may be able to help you.*

We maintain complete spring testing facilities to help you solve any spring problem. Our spring engineering specialists can help you improve the *design* of your spring. We can help you determine the best possible *steel* to use. Then, we can completely check spring performance. We can simulate any spring operating condition and verify these recommendations in terms of improved service in your product.

Hundreds of companies have taken advantage of this service and have profited from it. Why don't you? Just write American Steel & Wire, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

USS is a registered trademark

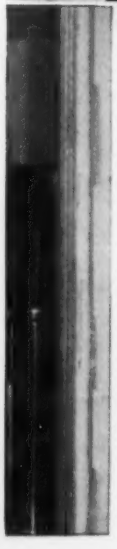


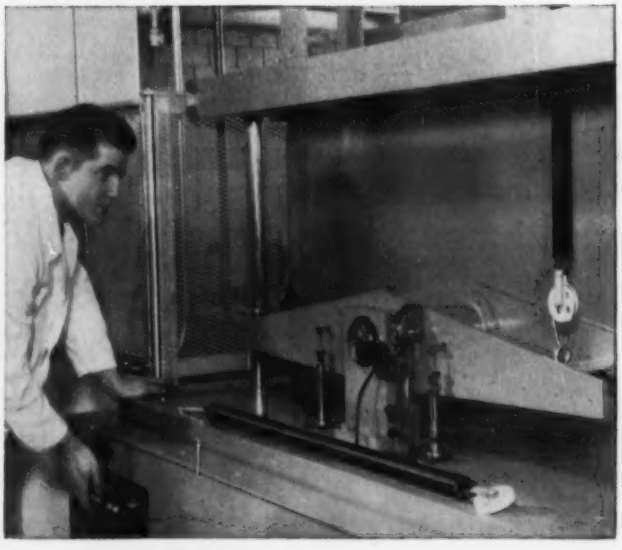
Heavy-Duty Clutch Springs Last Longer Now—Thanks to AS&W Spring Research!

The Lipe-Rollway Clutch Division, Lipe-Rollway Corporation, Syracuse, New York, asked AS&W Spring Engineering Research Service to determine if design change would lengthen the life of the flat wire compression springs used in their clutches. AS&W recommended design changes that greatly increased the spring life.

AS&W Spring Tests Make Possible New Design Rocking Chair!

40,000 springs—not one failure—American Steel & Wire helped Homecrest Company, Wadena, Minnesota, design a round wire helical torsion spring for an unusual new type of swivel rocking chair. To date, 20,000 of these chairs have been sold, but not one failure of the 40,000 springs has been reported.



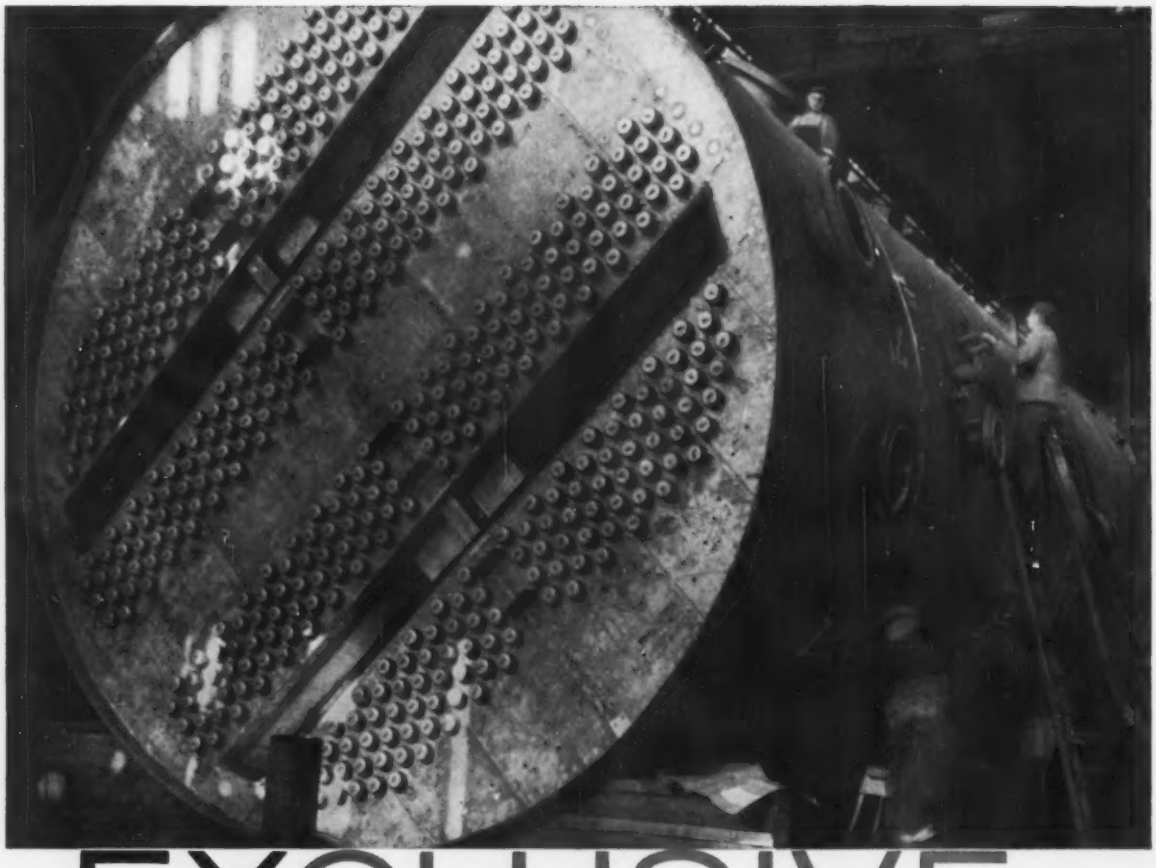


Design Change Increases Operating Life of Garage Door Springs!

The Steel Door Corporation, Birmingham, Mich., asked the AS&W Spring Engineering Research Service for a statistical evaluation of the fatigue life of this extension hook-type spring. As a result of the test, AS&W recommended a design change which has materially lengthened the operating life of the spring.

American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad



EXCLUSIVE...

At Sun Ship, STAINLESS STEEL is synonymous with EXCLUSIVE, because Stainless is never exposed to contamination by fabrication with ordinary carbon steel tools.

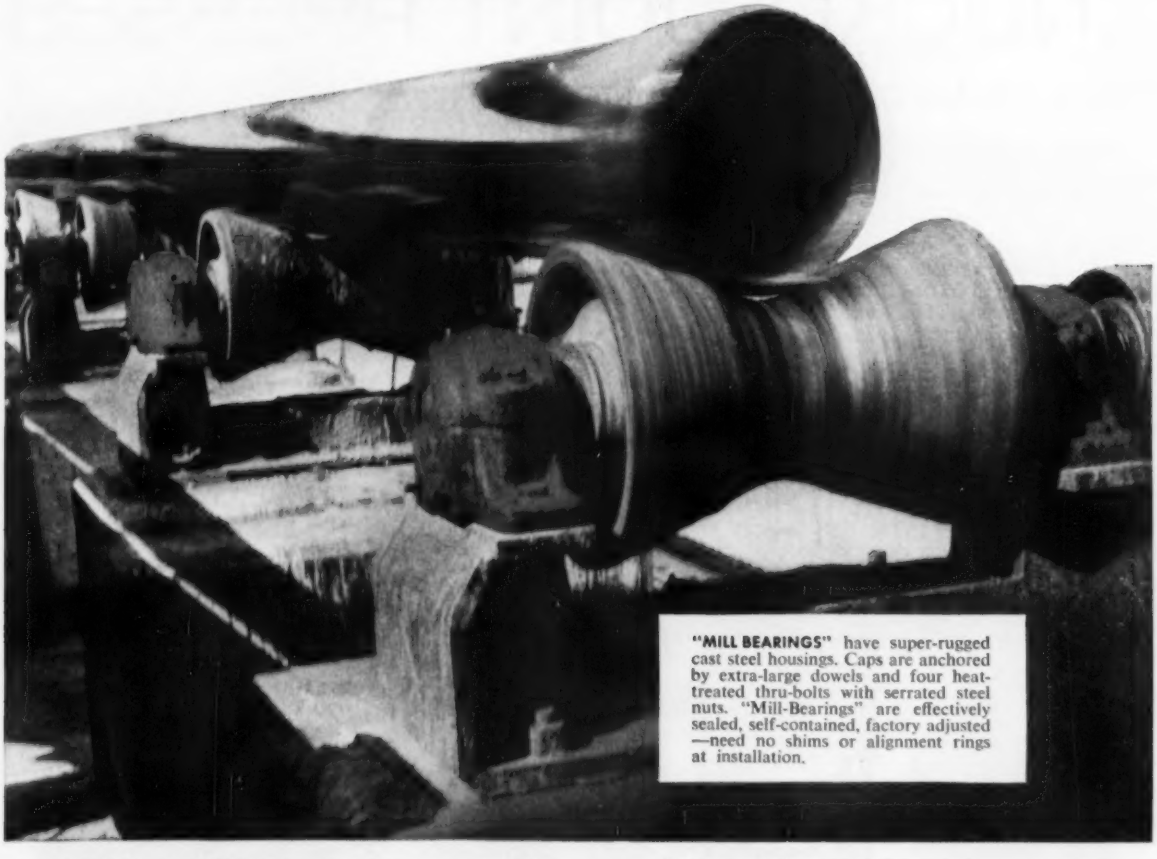
Working with the 300 to 400 series of alloys, clad steel, aluminum and other alloys, Sun fabricates pressure vessels, tanks, towers, troughs, autoclaves, reactors, hoppers, platework and machinery in all sizes and types. Each to exact specifications. Each with an additional quality feature... EXCLUSIVE.

SUN SHIP

BUILDING & DRY DOCK CO.
CHESTER, PENNSYLVANIA

HERE'S SELF-ALIGNMENT

in a steel housing



"MILL BEARINGS" have super-rugged cast steel housings. Caps are anchored by extra-large dowels and four heat-treated thru-bolts with serrated steel nuts. "Mill-Bearings" are effectively sealed, self-contained, factory adjusted —need no shims or alignment rings at installation.

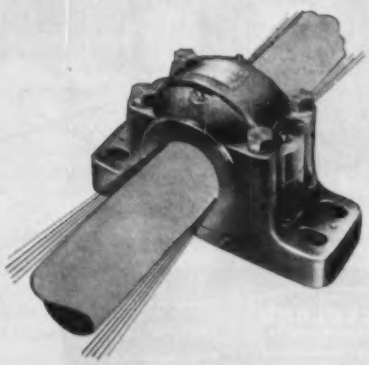
LINK-BELT "Mill Bearings" compensate for shaft deflections in extra-severe applications

With cast steel housings plus *self-alignment*, Link-Belt "Mill Bearings" are a perfect match for the grind and grime of heavy loads in steel mills, mines, foundries and similar grueling service. They instantly adjust to shaft misalignment . . . accommodate minor inaccuracies of welded and concrete support structures . . . end need for extra-heavy shafting to avoid deflections which ruin ordinary bearings.

Link-Belt "Mill Bearings" are part of industry's most complete line of self-aligning ball and roller bearing blocks. You can get full information from any of 40 Link-Belt offices or your authorized stock-carrying distributor.

LINK-BELT

MANUFACTURERS OF SELF-ALIGNING BALL AND ROLLER BEARINGS



Spherical bearing is free to align in any direction, assuring full load capacity regardless of shaft deflection.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 14,908

✓COLD FORMING ✓EXTRUDING ✓COINING ✓EMBOSSING ✓HEADING ✓SIZING ✓HEAVY STAMPING

CLEVELAND

KNUCKLE JOINT PRESSES

FOR AUTOMATIC FEEDS OR CUSTOM WORK

Whether equipped with multi-station feed for automatic production or doing custom work, Cleveland Knuckle Joint Presses exert a short but extremely powerful squeeze on the metal through massive, carefully fitted knuckles operating on shafts of hammered steel forgings.

Greater accuracy of production is obtained with these Cleveland Presses due to the long slide bearing surfaces and rugged frame construction featuring four massive tie rods. These control slide deflection to a minimum even under maximum load.

With capacities from 150 to 3000 tons and bed areas from 18 x 18" to 50 x 54", Cleveland Knuckle Joint Presses are engineered to do the job efficiently, economically. Investigate the cost-cutting advantages of these Cleveland Presses by writing for Catalog K2 today.

AA-5149

THE CLEVELAND PUNCH & SHEAR WORKS CO.
Established 1880

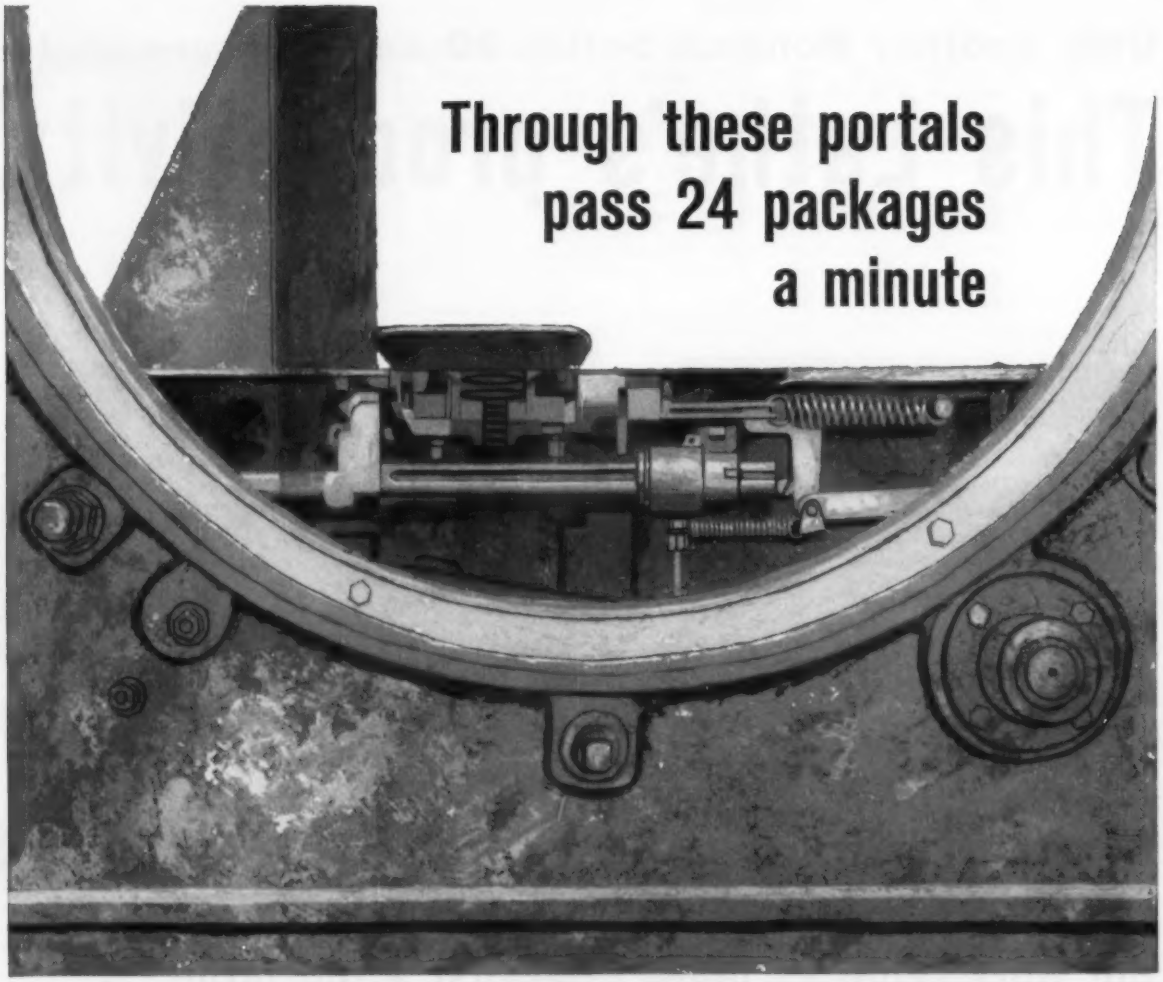
Power Presses
Fabricating Tools
Punching Tools & Dies

E. 40th and St. Clair Avenue, Cleveland 14, Ohio

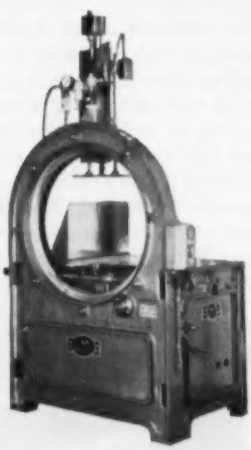
Offices: NEW YORK, DETROIT, CHICAGO, PHILADELPHIA, EAST LANSING, CINCINNATI

OTHER COST-CUTTING CLEVELAND PRESSES

FORGING • HORNING • TRIMMING • INCLINABLE • OPEN BACK GAP • STRAIGHT SIDED CRANK • STRAIGHT SIDED ECCENTRIC • DOUBLE ACTION TOGGLE • 4-POINT UNDERDRIVE



Through these portals pass 24 packages a minute



This is the "business end" of the USS Gerrard Model 12—the low-cost automatic strapping machine that makes up to 24 cycles a minute. The Model 12 comes in two sizes that handle packages as small as 8″ wide by 2″ high; the larger Model 1250 handles packages up to 26″ wide by 20″ high. Both machines are equipped with a compression device that compresses the packages and holds them in position during the tying operation.

The Model 12 is 31″ high, weighs only 1350 pounds, and requires only 7½ square feet of valuable floor space. Using extra-strong USS Gerrard High-Tensile Round Steel Strapping, 14 through 18½ gauge, you can thread the machine in less than a minute. It's simple to operate, and its compact, rugged construction with a one-shot built-in lubrication system means low maintenance. Tension can be predetermined, and when set is uniformly maintained on all packages regardless of size or weight. Packages which vary in size and shape can be strapped without adjustment to the machine.

For more information, contact your USS Gerrard sales representative. Also be sure to mail the coupon for the folder on the Model 12. *USS and Gerrard are trademarks*

USS

Gerrard Steel Strapping Dept.
U. S. Steel Supply
Division of
United States Steel

Gerrard Steel Strapping Department
U. S. Steel Supply Division
United States Steel Corporation
208 South La Salle St., Chicago 4, Ill.

Without obligation, please send me the new Model 12 Brochure.

Name .....

Company .....

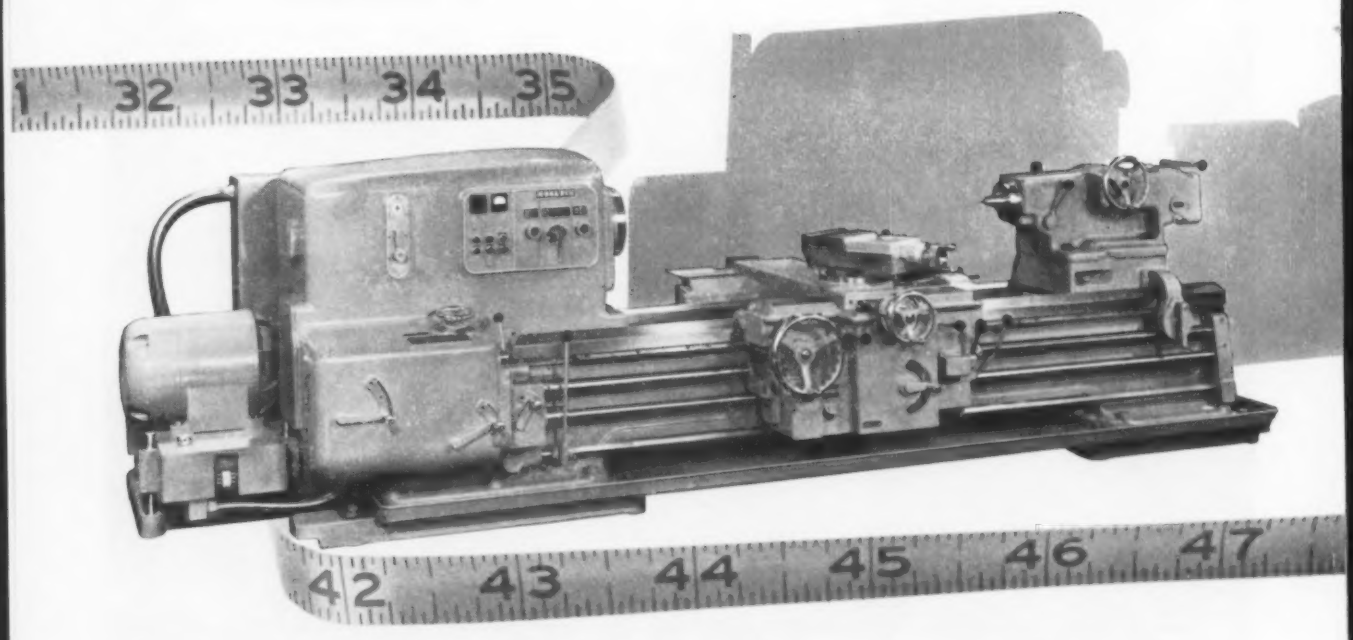
Address .....

City ..... **State** .....

Have Salesman call ☐

Only Another Monarch Series 90 can measure up to

This Lathe's productivity



Big work requires more than just a big lathe

Massive machine components and the necessary swing capacity don't fill the complete bill by far. The basic consideration is almost always greater production, therefore lowered costs.

You get this in the Monarch Series 90 Heavy Duty Dyna-Shift—an ultra-modern machine which will remove more metal at any speed than is possible on any other heavy duty lathes. Maximum production is assured because here is a machine that can be kept under full load during the entire cutting cycle. Major contributing factors design-wise are more machine output per unit of power input, less operator effort, reduced maintenance, ease of supervision. The Series 90 meets all these requirements as does no other heavy duty lathe — and the points discussed in this ad tell you why.

Production increases of 25% or more along with a similar improvement in tool life are a common experience for Series 90 users. There's the pay-off when you invest in the best—the cheapest in the long run. The Series 90 is available in three models ranging from 40" to 48" clearance diameter and 25" to 36" swing over the cross slide. Write for Booklet 1601.

THE MONARCH MACHINE TOOL COMPANY, SIDNEY, OHIO.

ELECTRICALS PLACED RIGHT

1. External main drive motor mounting and external electrical control mounting (either NEMA or JIC) for quick accessibility.

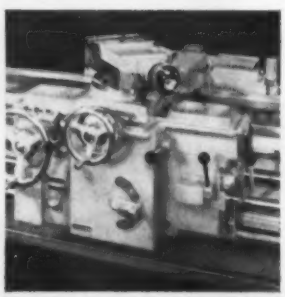
2. Motor mounted on hydraulic system sump also supplies power for hydraulic pump.

CONTROL CENTERED AT THE APRON

1. Electrically actuated power traverse, left or right, for fast carriage movement. Jogging for critical positioning may be accomplished any time desired.

2. Positive, cam controlled feed frictions. Application is such that machine never loses its chip under the heaviest of cuts.

3. All controls located to permit operation from a stand-up position—no stooping or stretching necessary.



HEADSTOCK WITH A BRAIN

1. 36 speeds—range 6 to 750 R.P.M.—ratio 1 to 125. Standard range low enough, high enough and with plenty of speeds in between to provide reasonably constant surface cutting speed on most work.

2. Operator works in terms of surface cutting speed. Machine automatically figures correct R.P.M. and sets up shift. Operator sets two dials—one for work diameter, the other for desired surface speed. A speed indicator always shows the R.P.M. in engagement.

3. Flip of a lever gives free spindle in a jiffy. And there is a generous 4 1/16" hole through the spindle.

4. Hydraulic brake and clutch are self-adjusting for wear. Being under automatic machine control regardless of load, operator needs not supply power for engagement.

MACHINE CONTROL—EASY DOES IT

1. Series 90 controlled by a three-position lever at the apron. A duplicate lever close to the headstock is provided for setup purposes. With this lever, work rotation may be started or stopped and jogging may be accomplished.

2. Shifting, an operation performed many times each day, is at fingertouch ease and speed. Hydraulic power does the work of clutching, braking, gear shifting and jogging.

COMPLETE AUTOMATIC LUBRICATION

1. Headstock, end gearing and gear box served by single system of the filtered, combination mist-splash type.

2. Apron lubrication system of the circuited, metered and filtered type also provides oil to carriage guide ways and cross slide bearings. There is ample lubrication during both power and manual longitudinal and cross feed.

3. Separate tailstock lubrication system.

PROTECTED GEAR BOX AND END GEARING

1. Both the gear box and end gearing are totally enclosed. Lubrication is kept in, dirt kept out, original accuracy maintained.

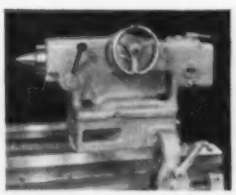
TOPS IN SAFETY INTERLOCKS

1. When machine is started, the brake engages automatically, preventing spindle rotation regardless of main control lever position.

2. No speed shift can be made with spindle rotating. More than anything else this preserves the original accuracy of headstock gearing.

3. Leadscrew and feed rod cannot be engaged simultaneously.

TAILSTOCK AHEAD OF THEM ALL



1. Either single speed or two speed range type available with dead or anti-friction center spindle. Sufficient mass, rigidity and spindle size (7" diameter) to support the heaviest of cuts.

2. Work piece expansion, due to heat, absorbed by heavy duty springs in the tailstock.

3. Handwheel located at front for convenience of operator when changing work pieces.

ADDED EQUIPMENT FOR ADDED PRODUCTION

1. Additional equipment in considerable variety is available for the Series 90 line. Consider, by all means, the advantages of the "Air-Gage Tracer," a means by which thousands of users have reduced costs substantially.

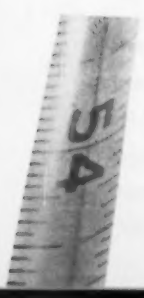
2. Ask for descriptive Booklet 1601 which not only describes the basic machine but the commonly used items of additional equipment and includes full specifications.

Monarch

ACCURACY + ECONOMY + LONG LIFE

TURNING MACHINES

FOR A GOOD TURN FASTER . . . TURN TO MONARCH



INSTANT SUPERVISION

1. At a glance, supervisor may check (a) work diameter setting, (b) S. F. P. M. setting and (c) H. P. consumption. This makes it possible easily and quickly for him to assure full productiveness of the machine and the operator at all times.

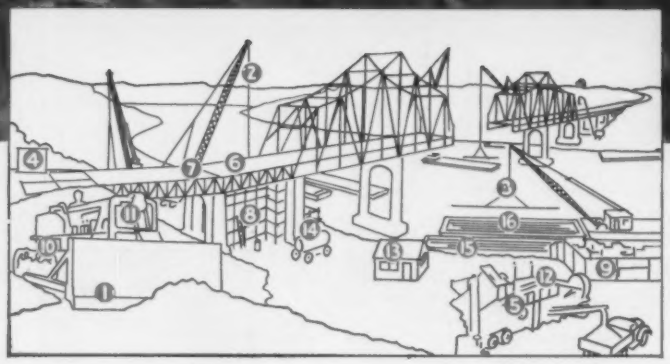
THE BED—FLAME HARDENED, ROCK-SOLID

1. All four bed ways flame hardened and precision ground to keep them factory-fresh for years to come.

2. Triangular bridge type girth construction throughout entire center section provides stability needed for heavy duty work.

3. Longer machines equipped with traveling rod supports which are automatically picked up and dropped off by apron.

4. Dual pump coolant system, with electrical control on apron convenient to operator, guarantees ample coolant exactly where and when it is wanted without long and unsightly hose strung over machine.



CF&I STEEL

1. CF&I Cutting Edges
2. Wickwire Rope
3. Wickwire Rope Slings
4. Clinton Welded Wire Fabric
5. CF&I Industrial Screens
6. Cal-Tie Wire
7. CF&I Concrete Reinforcing Bars
8. CF&I Nails & Spikes
9. Realock Fence
10. Wickwire Springs
11. Wissco Perforated Metals
12. Claymont Fabricated Steel Parts
13. Gold Strand Insect Wire Screening
14. Claymont Flanged & Dished Heads
15. Claymont Carbon & Alloy Steel Plates
16. Claymont Large Diameter Steel Pipe

PRODUCTS *help on tough jobs!*

Today's builders are specialists who know how to get a difficult job done...and done economically.

No wonder you'll find these CF&I Products on so many construction jobs—for they help do the job swiftly, economically and safely.

You, too, can use these CF&I Products to advantage on your bridge, road or other construction job. For full details, see your nearby CF&I representative.

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso Ft. Worth • Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City San Antonio • San Francisco • Seattle • Spokane • Wichita

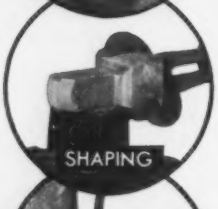
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

CF&I OFFICE IN CANADA: Toronto

A Chambersburg Flat Die Hammer will save time and money in any shop · · will quickly pay for itself

A 200 LB. CHAMBERSBURG PNEUMATIC HAMMER • SELF-CONTAINED

A 400 LB. CHAMBERSBURG SINGLE FRAME GENERAL UTILITY HAMMER (STEAM OR AIR)

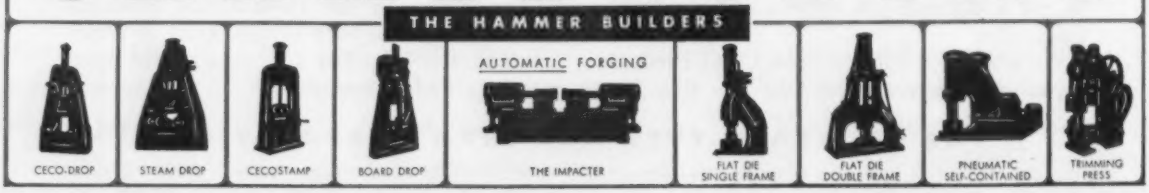


A small or moderate size flat die hammer is a great convenience for any shop where machinery repair or maintenance work is carried on. You can save time and money and often make a better repair part than you can buy, or make by casting or welding. When you need a replacement part in a hurry, or an emergency job of even unusual size, that's where a Chambersburg hammer will pay for itself. If you have steam or air available, a single frame steam hammer will be your logical choice. If not, a Chambersburg pneumatic, with motor, compressor and hammer in one, will be your best bet. Write for complete information.

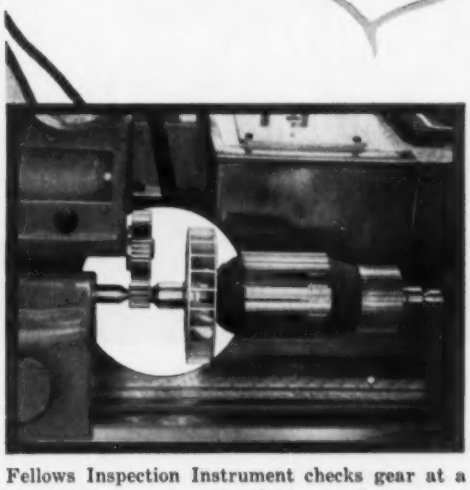
CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS



GEARED to give lightweights heavyweight power!



Fellows Inspection Instrument checks gear at a major gear-motor manufacturer. Integrated Fellows production and inspection equipment assures dependable quality control.

Power used to mean *weight*, too, but not any more; modern gear-motors pack immense power in a small volume, deliver maximum output per pound. Light executive aircraft use powered accessories only large planes could carry ten years ago. Products as diverse as home appliances and machine tools have grown steadily more powerful while shrinking in size and weight.

Accurate, dependable gears produced on Fellows equipment are essential to the performance of many of these mighty midgets. Their operation must be relatively smooth and quiet, even with the high reduction ratios required in many of them. Here, as in many other applications, Fellows Gear Shapers combine accuracy with production speed and low unit cost.

Your own gear production needs, from 1/16" to 120" pitch diameter, can probably be met more efficiently and profitably with Fellows equipment. For full information, get in touch with any Fellows office.

THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont
Branch Offices:
1048 North Woodward Avenue, Royal Oak, Mich.
150 West Pleasant Avenue, Maywood, N. J.
5835 West North Avenue, Chicago 39
6214 West Manchester Avenue, Los Angeles 45

THE PRECISION LINE

Fellows *Gear Production Equipment*

RICHARD F. MOORE, President
Moore Special Tool Co., Inc.

a man who came to Fair Street

"Like everyone else we had to see the Jigmil Technique before we could believe it"

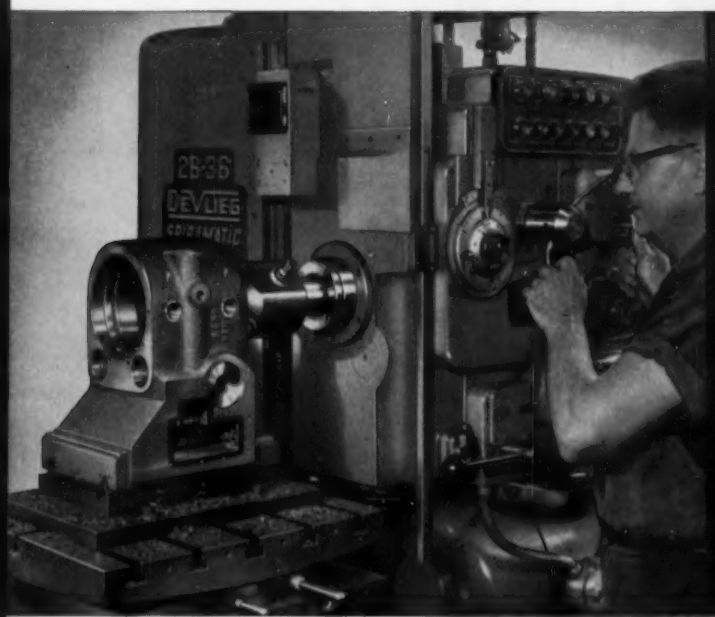
"Our visit to Fair Street resulted in the purchase of three JIGMILS. The machines are part of a complete retooling program to help us meet rising costs and hold the line on our prices. We use the JIGMILS to machine larger jig borer and jig grinder parts to the fine accuracies required in our own machine tool products. We do not believe that we could design and build a special machine for our own needs that would beat the JIGMIL. For us, the JIGMIL is the last word."

RICHARD F. MOORE

DE VLIEG MACHINE COMPANY, FAIR STREET • **ROYAL OAK, MICHIGAN**

SOME OF OUR JIGMIL USERS

American Steel Foundries
Avey Drilling Machine Co.
Axelson Manufacturing Co.
Baldwin-Lima-Hamilton Corp.
Barber-Colman Company
Blanchard Machine Co.
E. W. Bliss Co.
Boyar-Schultz Corp.
Brown & Sharpe Mfg. Co.
Bryant Chucking Grinder Co.
Buhr Machine Tool Co.
Cincinnati Milling Machine Co.
Cincinnati Shaper Co.
Cleveland Automatic Machine Co.
Cone Automatic Machine Co., Inc.
Crankshaft Machine Co.
Cross Company
Davis & Thompson Co.
Detroit Broach Company
Ex-Cell-O Corporation
Foote-Burt Company
Gisholt Machine Co.
George Gorton Machine Co.
Gould & Eberhardt, Inc.
Greenlee Bros. & Co.
Heald Machine Company



ADVANTAGES OF THE JIGMIL TECHNIQUE reported by Moore Special Tool Co., Inc.

- Fast, fool-proof positioning
- Quick tool changes
- Fast indexing of part to four sides
- Retraction of table for measuring
- Depth of hole stops
- Quick change of wide spindle speed range
- Large range of boring bars from DeVlieg stock
- Easy accessibility to controls

ACCURACY IS AN ECONOMY!

JIGMIL—THE MACHINE TOOL BUILDERS' MACHINE TOOL

Moore uses its three JIGMILS with DeVlieg Microbore boring bars to mill, bore, drill and tap large components for its own line of ultra precision machine tools. A jig grinder spindle housing is shown being machined on their 2B-36 JIGMIL equipped with a DeVlieg 20" x 20" index table. Parts are rough and finish machined to precise limits of accuracy on four sides in one setting by simply indexing the index table.

Ingersoll Milling Machine Co.
Jones & Lamson Machine Co.
Kearney & Trecker Corp.
Landis Tool Co.
R. K. LeBlond Machine Tool Co.
Lees-Bradner Company
Lodge & Shipley Company
Mechanical Specialties Co.
Moore Special Tool Co., Inc.
National Automatic Tool Co., Inc.
National Machinery Co.
Onsrud Machine Works
Rockford Machine Tool Co.
Snyder Tool and Engineering Co.
Sundstrand Machine Tool Co.
Warner & Swasey Company

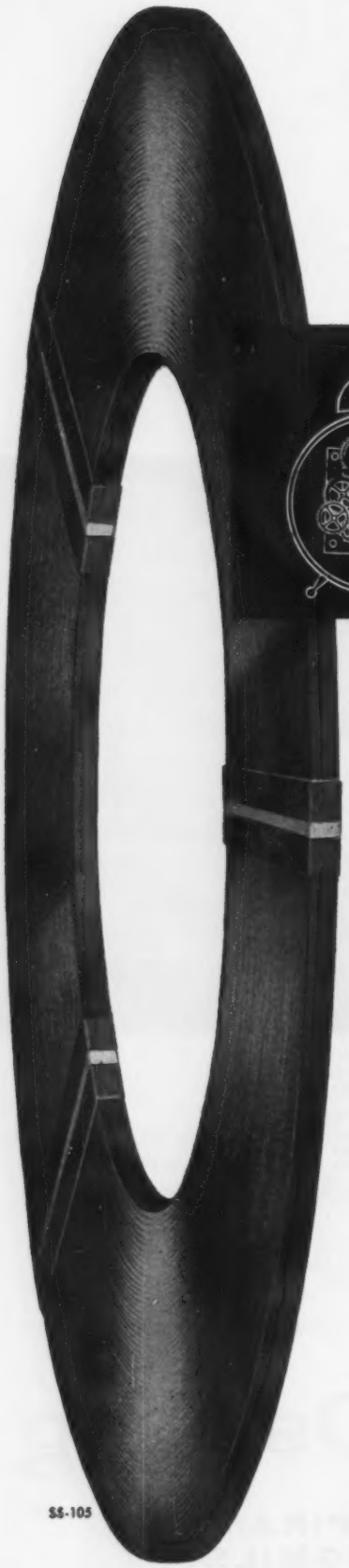
WILL YOU BE THE NEXT TO VISIT FAIR STREET

Our newest catalog will help you decide. May we send it?

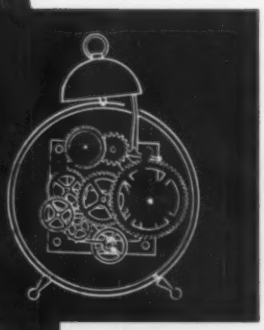
DeVlieg

SPIRAMATIC JIGMILS®

ACCURATE HOLES AND FLAT SURFACES IN PRECISE LOCATIONS



For Years of Repeat Performance



specify SANDVIK SPRING STEEL

Sandvik Steels have a record of success in applications which demand years of consistent, continuous performance.

In products such as clock and watch springs, compressor valves, piston ring springs, vibrator reeds . . . wherever fatigue life is *vital*, you'll find Sandvik untiring in service.

If your product requires high fatigue life, fine surface finish, uniform physical properties and accurate gauge, try Sandvik.

You can get Sandvik strip steels:

- **In special analyses for specific applications.**
- **Precision-rolled in thicknesses to fit your requirements.**
- **In straight carbon and alloy grades.**
- **Annealed, unannealed or hardened and tempered.**
- **Polished bright, yellow or blue.**
- **With square, round or dressed edges.**
- **Wide range of sizes in stock—also slitting facilities available.**

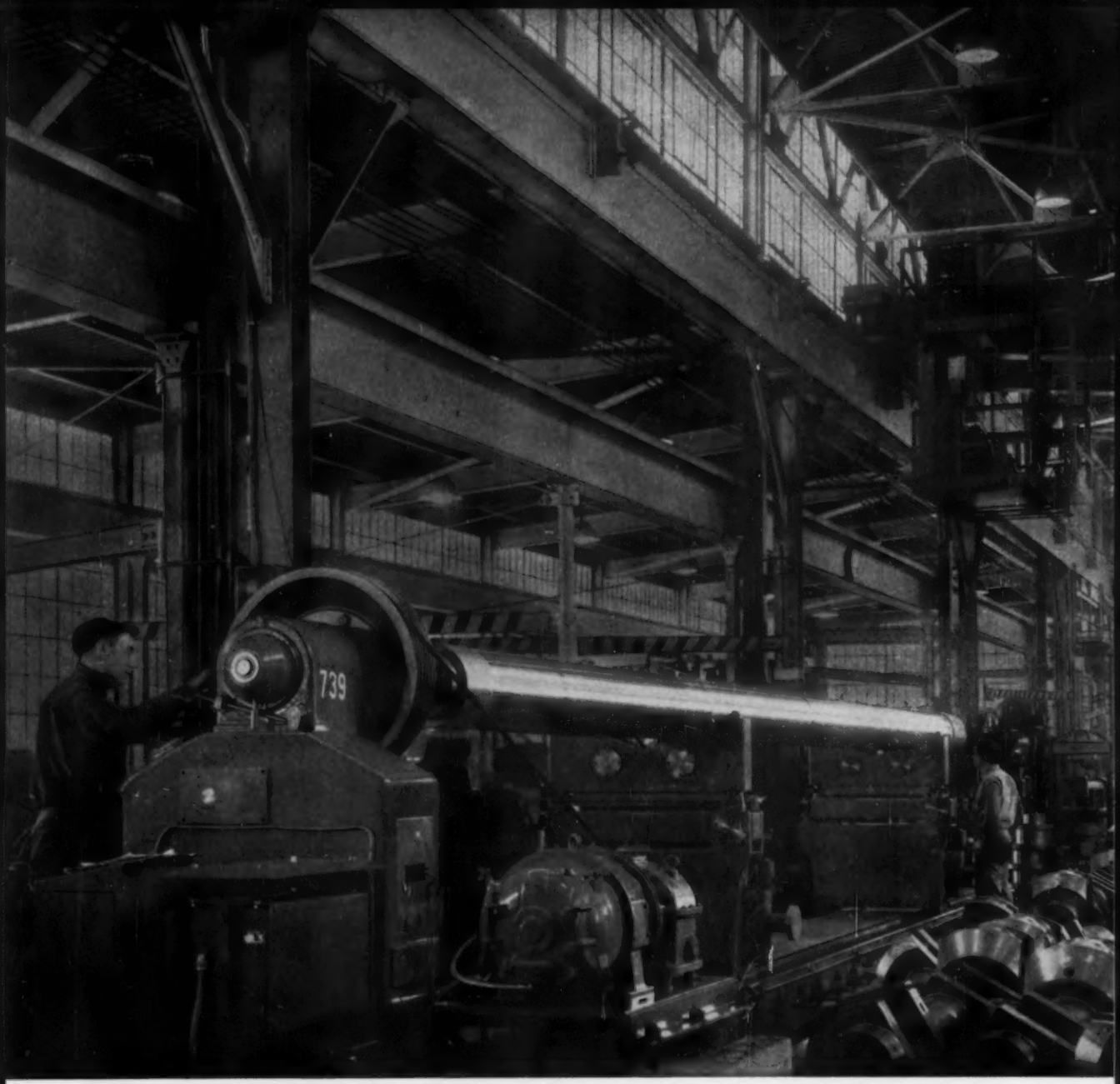
Ask your nearest Sandvik office for further information or technical assistance.

SANDVIK SWEDISH SPECIALTY STRIP STEELS
are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical, etc. • Razor Blades • Shock Absorbers • A Wide Variety of Springs • Trowels • Reeds: Vibrator, Textile, etc., • Piston Ring Segment and Expanders • and many other applications.

SS-105

SANDVIK STEEL, INC.
1702 NEVINS ROAD, FAIR LAWN, NEW JERSEY
Tel. SWarthmore 7-6200 • In New York City: Algonquin 5-2200
Warehouses: Fair Lawn, N. J. • Cleveland • Los Angeles
Branch Offices: 8650 Brookpark Rd., Cleveland 29, O.—ONtario 1-3205
230 North Michigan Ave., Chicago 1, Ill.—FRanklin 2-5638
14131 Puritan Ave., Detroit 27, Mich.—BRoadway 3-8474
3338 South Malt Ave., Los Angeles 22, Cal.—RAymond 3-9116
SANDVIK CANADIAN LTD.—P. O. Drawer 1335, Station O, Montreal 9, P.Q.
SANDSTEEL SPRING DIVISION • Fair Lawn, N. J. • Industrial Springs
SANDVIK COROMANT DIVISION • Fair Lawn, N. J. • Carbide Tools
WORKS: Sandviken, Sweden

Sandvik Quality Steels



WHO FORGES THE TOUGH ONES?
and dynamic balances them, too?

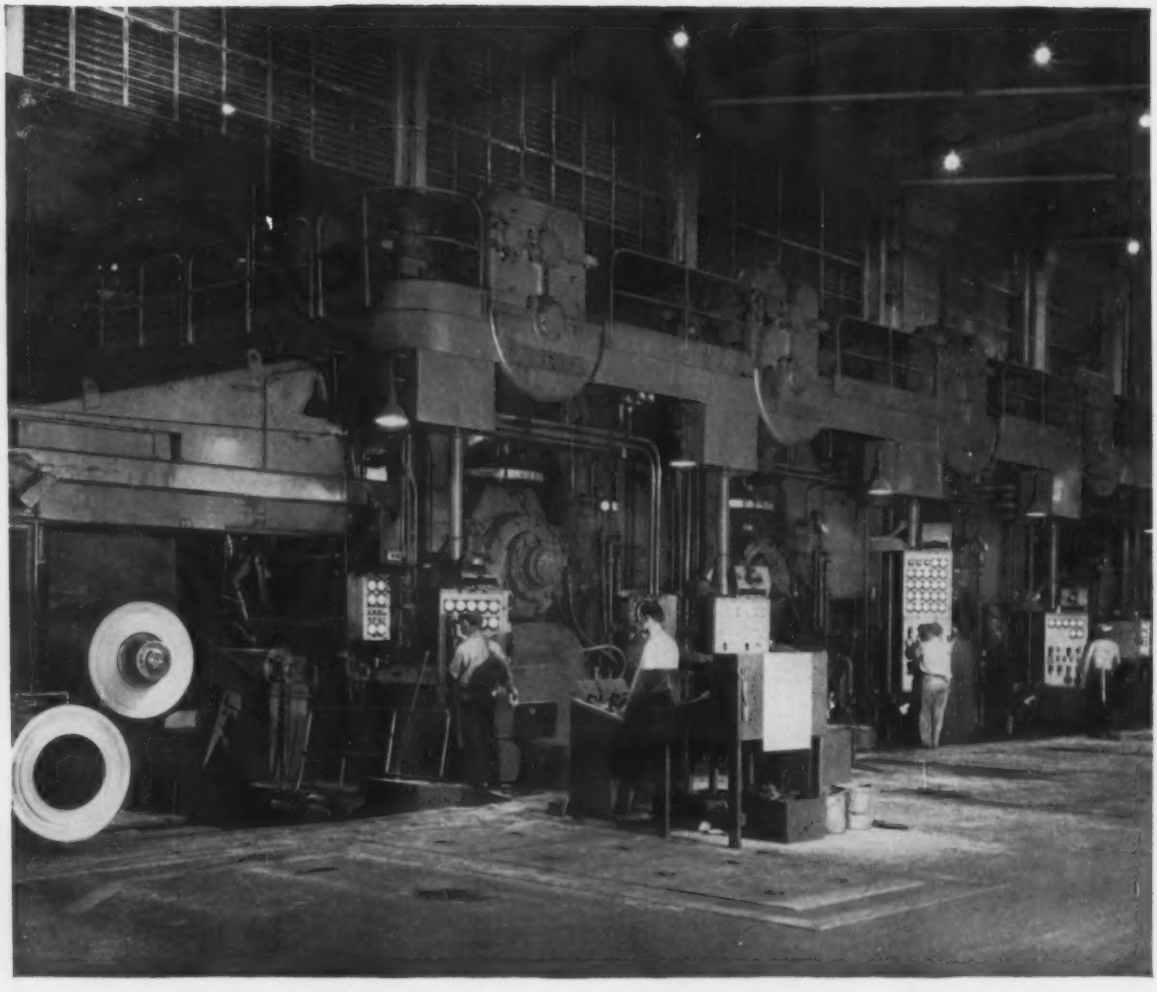
To further National Forge's reputation for producing precise forgings, we've installed one of the largest, most accurate dynamic balancing machines in use. Our American-Trebel has a 33,000-pound, 60-foot capacity.

Pictured on the machine is a 42 ft. propeller shaft that has been forged, machined, and hollow bored—all operations done in our National Forge plant. NFO specialists are shown balancing this 15,500 lb. shaft to within 730 ounce-inches in two planes.

If you want one responsible source to produce and control the quality of your forgings . . . from melting and forging the steel through machining and dynamic balancing . . . call National Forge. Let us quote on your next job—and *prove* "who forges and dynamic balances the tough ones . . . best!"

NATIONAL FORGE & ORDNANCE COMPANY
IRVINE, WARREN COUNTY, PA.

For information on the "tough" ones and the machinery that makes them best, write for Bulletin NFO 1.



Weirton equips cold strip mill with double-poured Ni-hard working rolls

Ni-Hard nickel-chromium cast iron provides hardness of 80 to 82 Shore...provides long life, consistently good finish

Weirton Steel Company, a division of National Steel Corporation, is using double-poured Ni-Hard* nickel-chromium alloy iron working rolls on all five stands of its cold strip mill. These Ni-Hard rolls are 23-inches in diameter with a 52-inch face. Six stands in Weirton's hot strip mill are also equipped with Ni-Hard rolls.

Why Ni-Hard working rolls? Ni-Hard cast iron possesses a matrix structure in the mold cooled condition that is akin to that of heat treated steel. In addition, it contains a multitude of refined carbides which make an important contribution to its abrasion resistance. The resulting structure has great hardness, strength, and resistance to impact.

For your applications. Ni-Hard alloy possesses the fluidity and freezing range of the cast irons and can be readily cast in all forms and shapes common to the iron and steel foundry. If you'd like specific information concerning its application to your abrasion problem, write Inco. For details on double-poured Ni-Hard rolls, write the fabricator, United Engineering Company.

*Registered trademark

The International Nickel Company, Inc.
67 Wall Street INCO New York 5, N. Y.

NI-HARD

NICKEL MAKES CASTINGS PERFORM BETTER LONGER

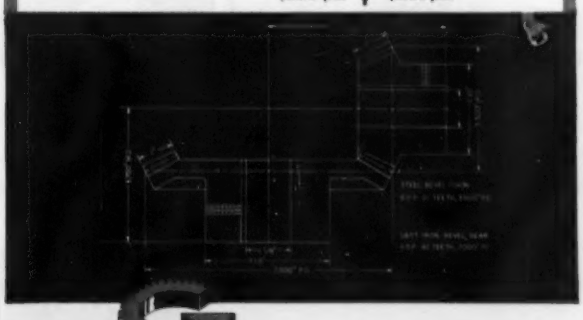
Gregory Grant says —

COMPARE THE COSTS!

BUY GRANT *Customized* GEARS FOR O.E.M. AND SAVE 25%

Here is a typical comparison — 50 sets of gears and pinions to meet assembly specifications:

Set of stock gears unaltered	$20.20	Set of Grant customized gears to your specifications, ready for installation
Rebore shaft hole/per pr.	.80	
Cut keyway/per pr.	.50	
Drill and tap for set screw/per pr.	.40	
	$21.90 pair	$15.75 pair



Yes, you can save 25% in actual costs when you specify Grant customized gears instead of making time-consuming alterations to fit stock gears to your needs. Layout, scheduling and machine time are eliminated, plus hidden costs for paperwork, handling and spoilage.

In addition to cost savings Grant customized gears save you time because they are ready for immediate assembly; rigid inspection prior to shipment makes certain that all gears are uniformly accurate to insure maximum dependability and eliminate rejects.

For all original equipment applications, you will be dollars ahead when you specify Grant customized gears. Send us your specifications for an immediate quotation — no obligation of course.

ESTABLISHED IN 1877

GRANT GEAR WORKS, INC. WEST SECOND STREET, BOSTON 27, MASS.

• *Catalog Available on Customized Gears* • *Precision Gears* • *Speed Reducers*

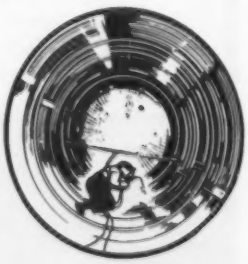
"ELECTROMET columbium alloys suit our needs best"

Columbium can be efficiently added to carbon and alloy steels and high-temperature alloys with ELECTROMET ferrocolumbium or ferrotantalum-columbium. Electric furnace and open-hearth operators can use these alloys to produce:

- Carbon and low-alloy steels, where columbium promotes a fine-grain structure for improved strength and weldability.
- Iron-, nickel-, and cobalt-base high-temperature alloys, where columbium improves strength at elevated temperatures.
- Stabilized austenitic stainless steels, where columbium inhibits intergranular corrosion.
- Non-air-hardening plain-chromium steels, where columbium minimizes air-hardening and acts as a grain refiner.

Ask your ELECTROMET representative for further details.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N.Y.



Welding Cb-stabilized stainless.
For information on columbium uses, contact ELECTROMET, pioneer in columbium development.

Electromet
FERRO-ALLOYS AND METALS

UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

KEYSTONE QUALITY...

Quirk DESIGN

make the strongest milk crates ever built!

How important is wire in the manufacture of milk crates? "Plenty!" says Casson Butcher, General Manager, Quirk Manufacturing Company, Cudahy, Wis. Here's why Quirk uses Keystone Galvanized Cold Rolling Quality Wire 100%.

- Heading quality—Quirk Bottle Saver Crates use patented double headed rods to brace the crate and prevent loosening of the bottom, corner and side channels. Keystone Wire serves this purpose perfectly.
- Uniform, zinc coating must resist daily immersion in chemical baths at the dairies, yet adhere tightly and avoid flaking from the cold rolling operation. (Flattened wire gives the necessary smooth surface for paper carton crates.)
- Weldability—clean silver brite galvanized surface on specially developed analysis of homogenous steel produces strong uniform welds.
- Easy forming—Quirk Bottle Saver Crates require high protective wire loops with slight spring action. Keystone cold rolling quality wire has the correct temper and stiffness to properly form with ease, yet retain the spring required for rough handling.

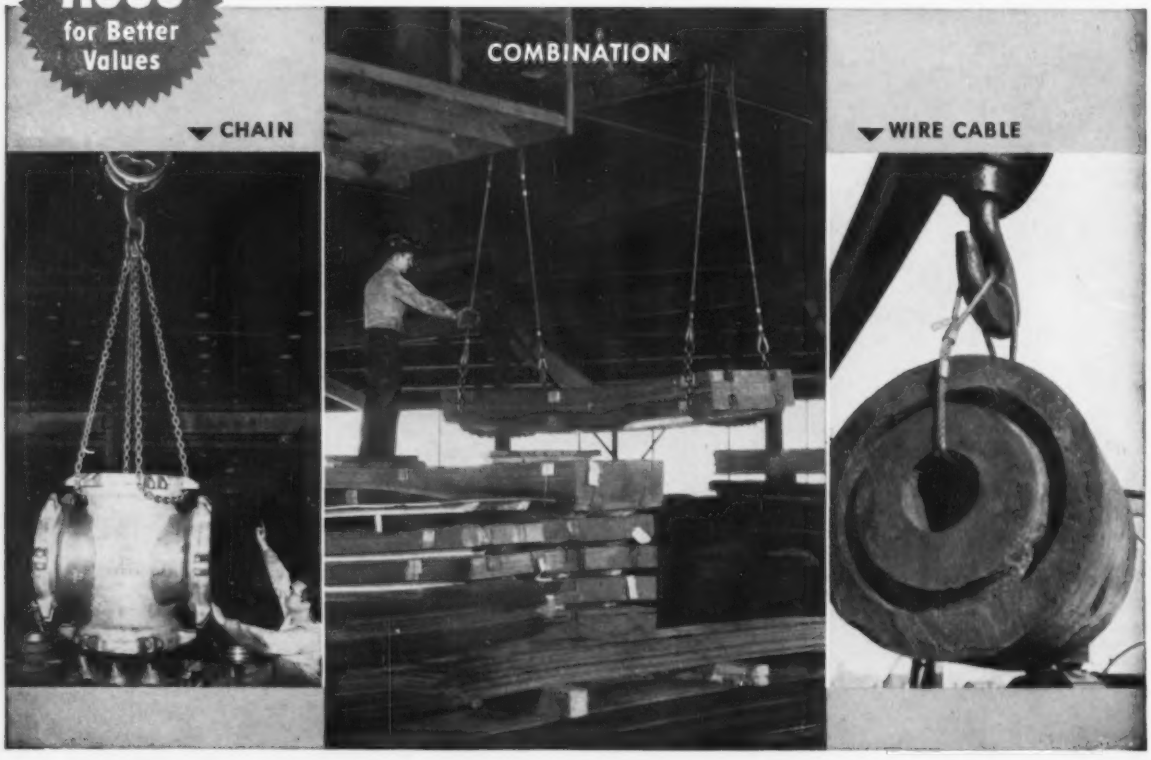
This is how another manufacturer builds a quality product —and Keystone Wire helps make it easier and more practical. It may be the answer to many of your quality control problems, too. For complete information, call your Keystone Representative. Our metallurgical staff is anxious to help solve your wire problems.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE WIRE FOR INDUSTRY

ACCO for Better Values

Acco Registered® Slings—Chain and Cable



ACCO—your first source for any sling for any job

Whatever your sling requirements, there's an ACCO *Registered* Sling to do your particular lifting job in the safest, most economical way possible. Your rigger knows why certain slings should be used to lift certain types of loads, depending on varying factors of shape, weight, material and finish. Sometimes chain slings are necessary; other times cable; and on certain lifts a combination of chain and cable slings are best.

Because sling work requirements do vary from job to job, make certain that all your slings are precision-made under uniform conditions of quality control and pre-tested before they leave the factory. Only ACCO *Registered* Slings can give you this assurance...in the widest range of sizes and styles from any single source.

In addition, you get the latest technical improvements in ACCO *Registered* Slings. For example, there's the new shaped Master Link now available without extra charge on all ACCO *Registered* Slings. This new link, an exclusive development of ACCO engineers, gives 18% greater resistance to distortion with no increase in weight. Just one more quality bonus you get from ACCO *Registered* Slings.

Each of these slings is factory proof-tested at a load of no less than twice its rated capacity. Only after a sling has passed this rigorous test is it given the ACCO tag and certificate of registration.

Tell your distributor you prefer ACCO *Registered* Slings.

WHAT "ACCO REGISTERED" MEANS

1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of complete sling to twice the working load limit
4. Actual field service test of each design
5. Metal identification ring or tag on each sling
6. Signed Registry Certificate with each sling

AMERICAN CHAIN & CABLE
BRIDGEPORT, CONN.

ACCO

Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Wilkes-Barre, Pa., York, Pa.
In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

UNITED ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington.

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

likes Victor Machine Torches and Tips

AND SO WILL YOU, because you get travel speeds from 0 to 180″ per minute, forward or reverse, with Victor's Model VU-120 portable flame-cutting machine. It cuts straight lines, circles, square or bevel kerfs with remarkable accuracy. Wide speed range enables you to adapt travel carriage to many automatic welding applications, using either submerged or inert arc.

HERE IT'S SHOWN cutting with a **new** LPCG machine cutting torch and tip — one of a **new** series designed to give maximum efficiency with natural and propane preheat gases. Remember, Victor torches perform best when you use genuine Victor tips.

For the torches and tips that cut your costs, call your Victor dealer.

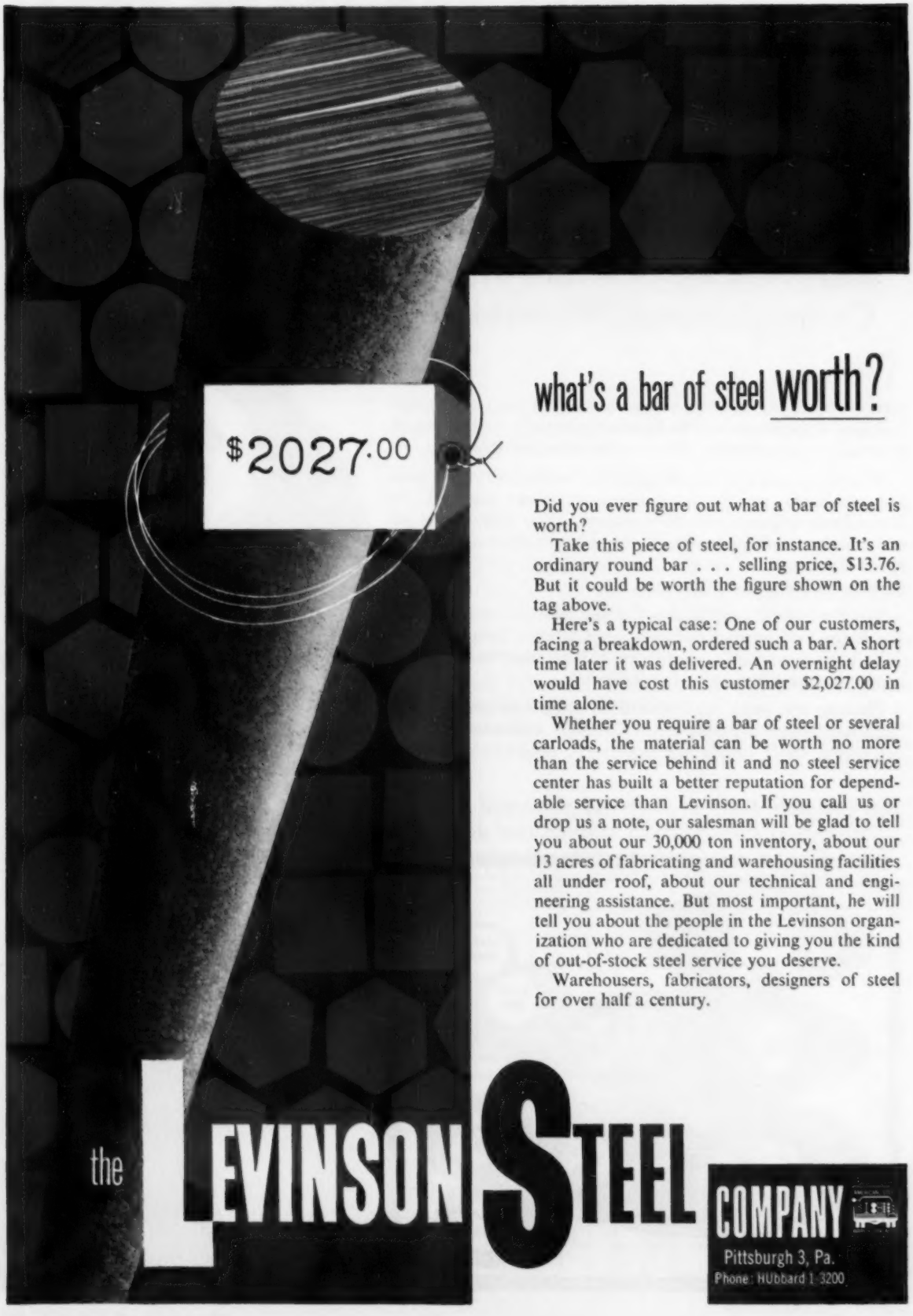
VICTOR for welding

VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; high pressure and large volume gas regulators; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

49

844 Folsom St., San Francisco 7 • 3821 Santa Fe Avenue, Los Angeles 58
1145 E. 76th St., Chicago 19
J. C. Menzies & Co., Wholly-Owned Subsidiary



what's a bar of steel worth?

Did you ever figure out what a bar of steel is worth?

Take this piece of steel, for instance. It's an ordinary round bar . . . selling price, $13.76. But it could be worth the figure shown on the tag above.

Here's a typical case: One of our customers, facing a breakdown, ordered such a bar. A short time later it was delivered. An overnight delay would have cost this customer $2,027.00 in time alone.

Whether you require a bar of steel or several carloads, the material can be worth no more than the service behind it and no steel service center has built a better reputation for dependable service than Levinson. If you call us or drop us a note, our salesman will be glad to tell you about our 30,000 ton inventory, about our 13 acres of fabricating and warehousing facilities all under roof, about our technical and engineering assistance. But most important, he will tell you about the people in the Levinson organization who are dedicated to giving you the kind of out-of-stock steel service you deserve.

Warehousers, fabricators, designers of steel for over half a century.

the LEVINSON STEEL COMPANY

Pittsburgh 3, Pa.
Phone: HUbbard 1-3200

LOOKING FOR MORE FROM

For steelcutting . . . trim costs with Carboloy® Extra-Performance Grades 330, 350, and 370, and low-cost, General-Purpose Carboloy 78 and 78B carbides

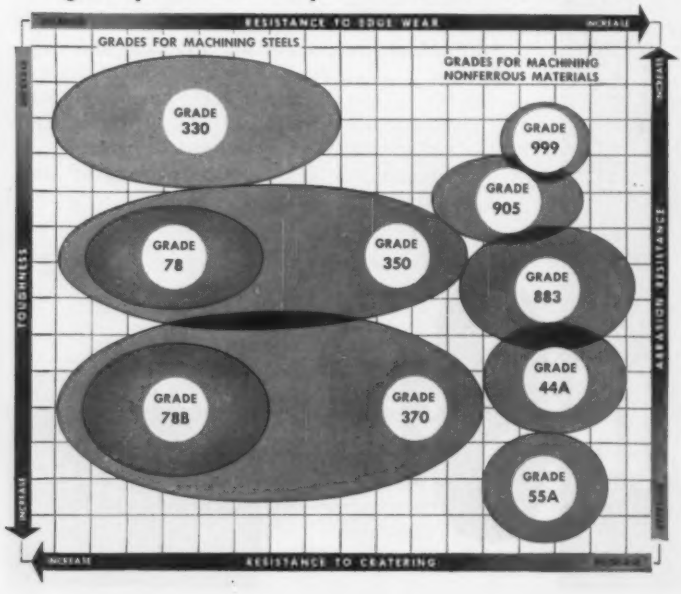
Some steelcutting jobs call for extra-tough, extra-performance carbides. Others can only be handled profitably with low-cost, general-purpose carbides. That's why we make them *both*.

Where you need increased machine productivity and have long production runs to keep cost-per-piece low—use Carboloy Extra-Performance Series 300 carbides. Their added strength and stamina handle jobs ranging from heavy roughing to high-speed finishing . . . at a unit cost and rate no "premium" carbide on the market can beat.

But, for general-purpose steelcutting jobs that don't require the Extra-Performance carbides, use Carboloy Grades 78 and 78B. Their top-notch performance, at low initial tool cost, will keep your machines operating profitably.

Chances are, your plant should be using *both* grades. Your local Authorized Distributor of Carboloy cemented carbides can deliver tools, blanks and inserts you need . . . in a hurry.

This complete team of Carboloy cemented carbides gives you more for your carbide tool dollar!



YOUR CARBIDE TOOL DOLLAR?

For nonferrous materials . . . boost production rates with Carboloy® cemented carbides performance-matched to your machining jobs

Aluminum, titanium, super alloys, wood—all have machining peculiarities that raise cain with production schedules and tool costs. That's why we make *five* job-tailored Carboloy cemented carbides for cutting these materials.

With these five grades (see chart, at left), you can get the one with exactly the right combination of shock resistance and wear resistance to match your job—whether heavy, interrupted cuts, or precision finishing.

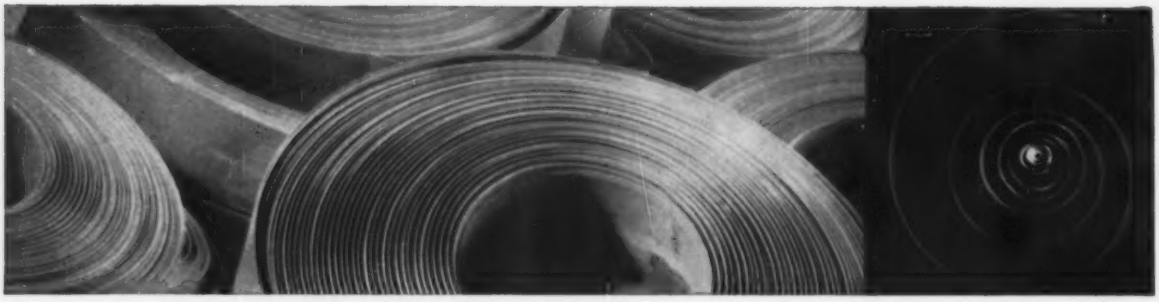
Because you're using performance-matched carbides with consistent metallurgical quality, you can schedule heavier production loads . . . and you will get this increased output at lower tool-cost-per-piece.

Your local Authorized Carboloy Distributor has complete stocks of tools, blanks, and inserts in these five grades. A phone call to him today will get your machines humming faster tomorrow.

For more information on Carboloy Extra-Performance and General-Purpose carbides, or nonferrous material carbides, write: Metallurgical Products Department of General Electric Company, 11153 E. 8 Mile Street, Detroit 32, Michigan.

CARBOLOY®
CEMENTED CARBIDES

GENERAL ELECTRIC



Check your requirements against these

Wallace Barnes Cold-rolled Specialty Steels

Furnished in these carbon grades:

1.25 – 1.32% .90 – 1.05% .70 – .80% .59 – .74% .48 – .55%

ANNEALED AND HARD-ROLLED

Thickness

.003 – .010″	in widths	1/8	to 6 1/4″
.011 – .014″	“ “	3/16	to 11″
.015 – .019″	“ “	3/16	to 13″
.020 – .035″	“ “	1/4	to 13″
.036 – .049″	in widths	3/8	to 13″
.050 – .064″	“ “	1/2	to 13″
.065 – .093″	“ “	3/4	to 6 1/4″
.093 – .125″	“ “	3/4	to 6 1/4″

HARDENED AND TEMPERED

Scale-free or scaleless; polished*; polished and blued*; polished and strawed*

Thickness

.003 – .004″	in widths	1/8	to 2″
.005 – .007″	“ “	1/8	to 3″
.008 – .009″	“ “	1/8	to 4″
.010 – .014″	“ “	3/16	to 5″
.015 – .019″	“ “	3/16	to 7″
.020 – .025″	“ “	1/4	to 8 1/2″
.026 – .030″	“ “	1/4	to 8″
.031 – .035″	in widths	1/4	to 7″
.036 – .040″	“ “	3/8	to 7″
.041 – .049″	“ “	3/8	to 6″
.050 – .060″	“ “	1/2	to 4″
061 – .064″	“ “	1/2	to 3″
.065 – .093″	“ “	3/4	to 3″

*Maximum width for polishing in .010 – .030 thickness ranges is 5 in.

Facilities for processing alloy steels also are available.

Standard sizes normally available for prompt shipments.

Write for a copy of “Physical Property Charts” that give performance characteristics of .90 – 1.05% and .70 – .80% carbon grades.

Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

TIGHTEN UP ON COSTS OF SEALING CORROSIVES

Time spent repacking or adjusting stuffing boxes, is the big cost of sealing against corrosives. To minimize maintenance Garlock offers the products illustrated for sealing against corrosives.

LATTICE BRAID* Teflon† PACKINGS

USERS REPORT:

CHEMICAL INDUSTRY—Centrifugal dye pumps required repacking every 24 to 48 hours. Switched to Garlock LATTICE BRAID asbestos with Teflon impregnation.

RESULTS: Minimum 3 months service. All the strands of this unique packing are lattice linked together into one structural unit. Each strand is impregnated with chemically inert Teflon for longer wear.

OIL INDUSTRY—On pumps handling blending waxes at 170° F. to 200° F., LATTICE BRAID Teflon packing lasts 8 to 10 times longer than other packings. Reason? Packing is *unaffected* by either the hot waxes or the steam used in cleaning the pumps.

Teflon impregnated LATTICE BRAID packings are another example of the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals for every need. The only complete line. That's why your Garlock representative can give you unbiased recommendations. Call him or write for Folder AD-131.

* Garlock trademark
† Dupont trademark

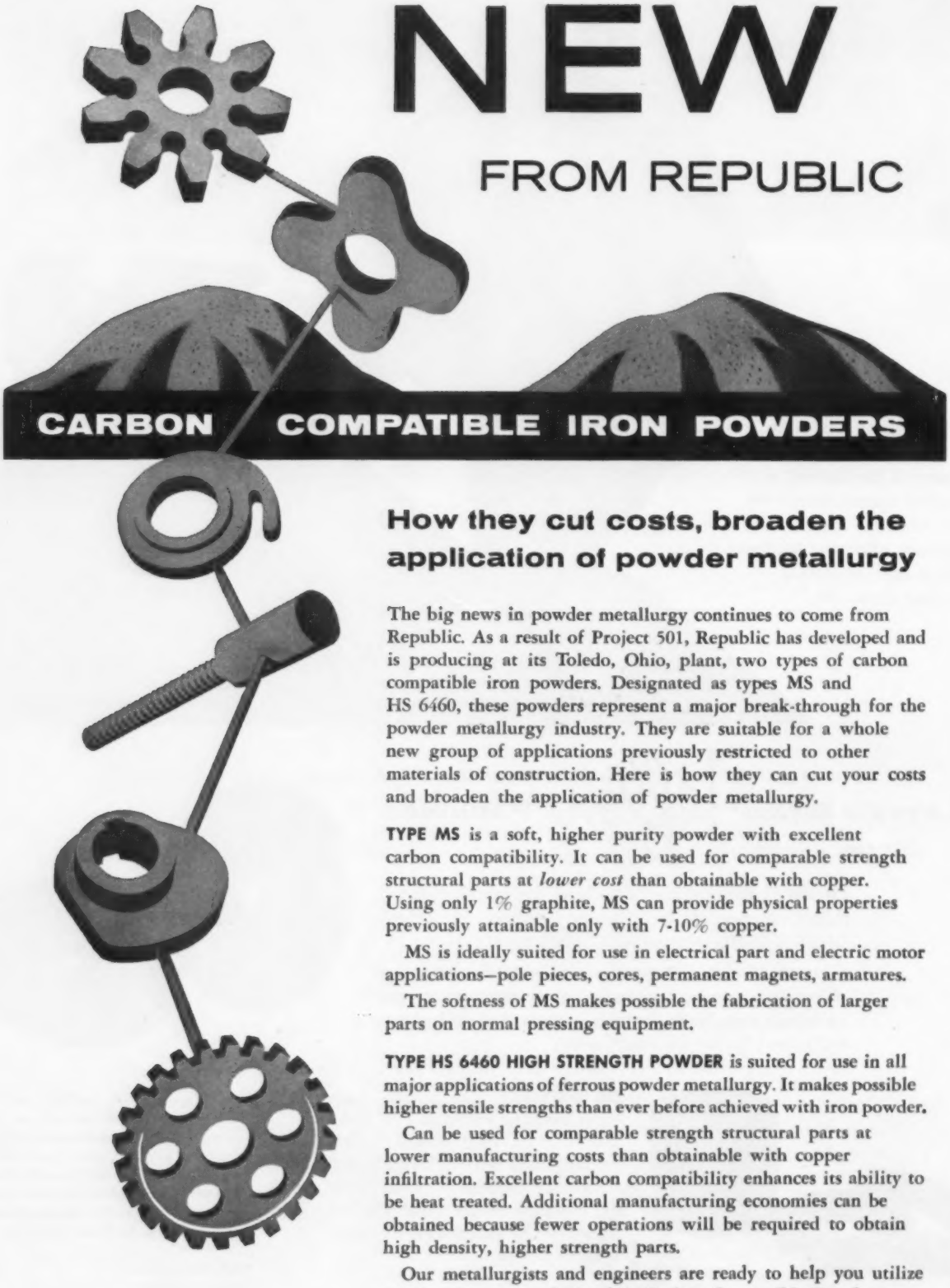
GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products

THE GARLOCK PACKING COMPANY, Palmyra, N. Y.
For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U. S. and Canada.

NEW

FROM REPUBLIC



How they cut costs, broaden the application of powder metallurgy

The big news in powder metallurgy continues to come from Republic. As a result of Project 501, Republic has developed and is producing at its Toledo, Ohio, plant, two types of carbon compatible iron powders. Designated as types MS and HS 6460, these powders represent a major break-through for the powder metallurgy industry. They are suitable for a whole new group of applications previously restricted to other materials of construction. Here is how they can cut your costs and broaden the application of powder metallurgy.

TYPE MS is a soft, higher purity powder with excellent carbon compatibility. It can be used for comparable strength structural parts at *lower cost* than obtainable with copper. Using only 1% graphite, MS can provide physical properties previously attainable only with 7-10% copper.

MS is ideally suited for use in electrical part and electric motor applications—pole pieces, cores, permanent magnets, armatures.

The softness of MS makes possible the fabrication of larger parts on normal pressing equipment.

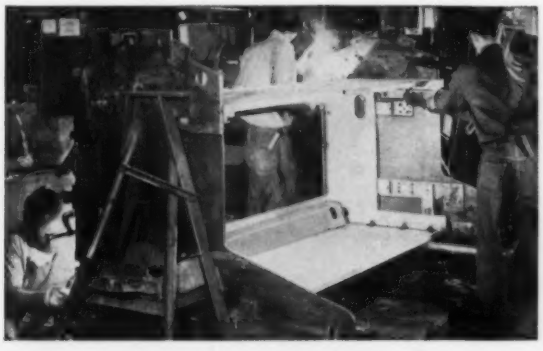
TYPE HS 6460 HIGH STRENGTH POWDER is suited for use in all major applications of ferrous powder metallurgy. It makes possible higher tensile strengths than ever before achieved with iron powder.

Can be used for comparable strength structural parts at lower manufacturing costs than obtainable with copper infiltration. Excellent carbon compatibility enhances its ability to be heat treated. Additional manufacturing economies can be obtained because fewer operations will be required to obtain high density, higher strength parts.

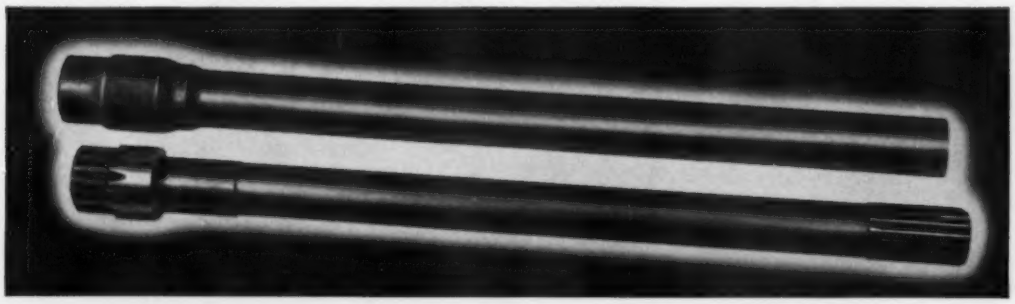
Our metallurgists and engineers are ready to help you utilize all the advantages of Republic Carbon Compatible Powders. Just mail the coupon to obtain their services, or for technical data sheets on Type MS and Type HS 6460 Powder.

other Republic products for fast, economical production

AMF CUTS COSTS, builds a better pinspotter with Republic ELECTRUNITE® Mechanical Tubing. On the initial order, ELECTRUNITE saved American Machine & Foundry Company, Brooklyn, New York, $34,000 in manufacturing their famous AMF Automatic Pinspotter. AMF was able to eliminate boring and grinding operations because ELECTRUNITE met O.D. tolerance requirements. This feature resulted in a savings of $15,000 in fabricating operations. Another $19,000 was saved on the cost of ELECTRUNITE as compared with tubing previously used. In uniformity, quality, original costs, Republic ELECTRUNITE Mechanical Tubing can save you time and money, too. Call Republic, or mail coupon for facts.



STRENGTH, CORROSION-RESISTANCE, AND ECONOMY are assured in Tyler refrigerated food sales-cases by proper design and material selection. The Tyler Refrigeration Corporation, Niles, Michigan, and Waxahachie, Texas, has found Republic Galvannealed Sheets ideal for inner and outer walls of these units. Interior parts call for strength and corrosion-resistance. Manufacturing requirements call for good ductility. Republic Galvannealed meets all of these requirements and provides initial and long-term economy as well. Its tight, uniform zinc coating, furnace fired for further corrosion-resistance, will take all ordinary forming operations. Shear, blank, pierce, form, flange, solder, deep draw, bead it with ease. Send coupon for details.



NEW FABRICATING PROCESS MEANS ECONOMY. Ford Tractor power take-off counter-shafts cost less to produce using Republic Die-Form blanks, as compared with previous materials. Blank is shown on top . . . completed shaft below. Die-Form is a new method of cold forming hot rolled carbon, alloy, or stainless steel bars into multi-diameter blanks ready for final machining. Since Die-Form blanks closely approximate the completed part, final machining is minimized. Handling costs for raw material and scrap disposal are reduced—production rates increased. Die-Form Process improves machinability of any given steel analysis. Permits further savings through use of higher feeds and speeds. Mail coupon for complete facts.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA-6609-A
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

☐ Have a powder metallurgist call.

Send more information on: ☐ MS Powder ☐ HS 6460 Powder ☐ Die-Form ☐ Galvannealed Sheets ☐ ELECTRUNITE Tubing

Name_____ Title_____

Company_____

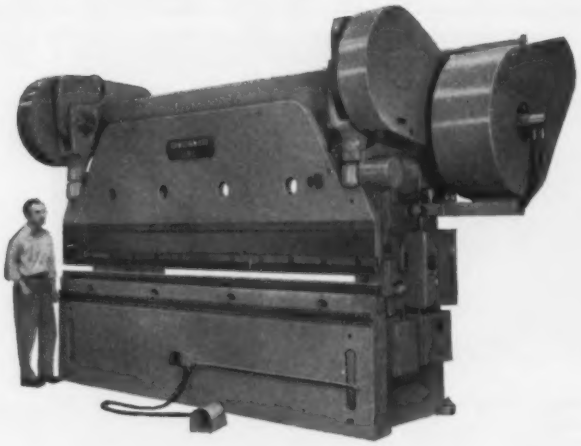
Address_____

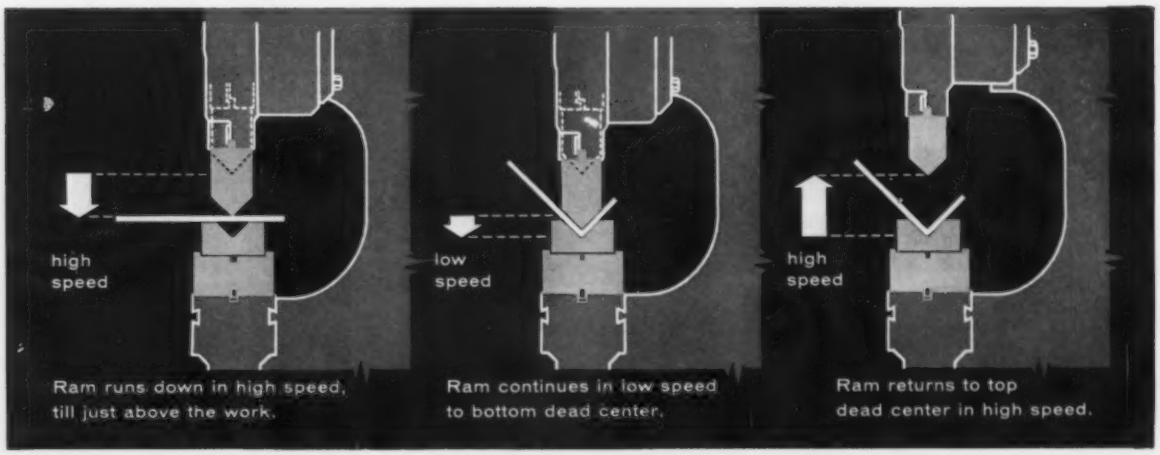
City_____ Zone____ State_____

10 to 60% increase in production makes

CINCINNATI® AUTOMATIC CYCLE

the most important press brake development in years!




high speed
Ram runs down in high speed, till just above the work.
low speed
Ram continues in low speed to bottom dead center.
high speed
Ram returns to top dead center in high speed.

Cincinnati® Automatic Cycle is a brand new feature which automatically provides two speeds to the ram for each stroke. It eliminates the "whip-up" of a sheet's free end that occurs when light gauge metal is formed over a small die opening at high speed.

Unlike previous attempts at reducing whip-up, the Automatic Cycle does not slow down the entire stroke of the press brake's ram. Nor does it require clutch slipping, which depends entirely on operator skill and at best is unreliable.

Think what these advantages can mean for you:

1. Actual job records show 10% to 60% increase in parts produced per hour.
2. You can set the length of the low-speed working portion of the ram stroke. Once this is set, all strokes are identical, which insures absolute consistency in the work.
3. Work spoilage (such as back bends caused by whip-up) is eliminated.
4. Highly experienced operators are not required.
5. Operator fatigue is greatly reduced by eliminating clutch slipping.
6. Clutch and brake are long-life, minimum-maintenance units requiring no adjustments.

This productive new feature is available now on all 7 and 9 Series Cincinnati Press Brakes.

Write Dept. B for Bulletin B-9R, which gives full details about Cincinnati® Automatic Cycle.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

Quality in Ascendancy

The superiority of the vast number of products that are—and can be made from Roebling Cold Rolled Flat Spring Steel is a fact known throughout all industry.

You pay for mechanical and dimensional uniformity when you buy flat spring steel...you *get* it when you buy Roebling.

For information on how our products can help *yours*, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

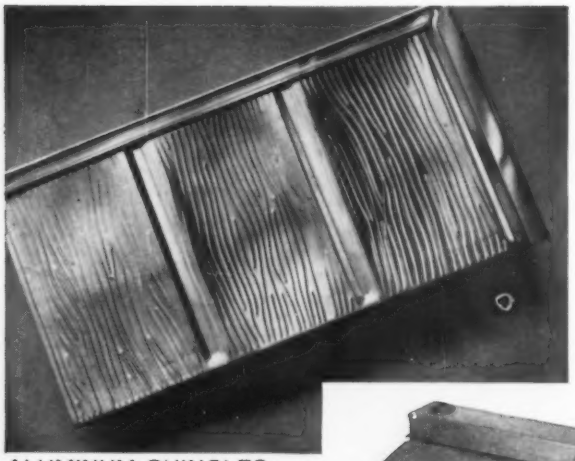
ROEBLING

Branch Offices in Principal Cities

Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it

When specifying aluminum for your product...



ALUMINUM SHINGLES

LIGHTING FIXTURES

CONDENSER COILS

Remember...

Every industry has one member who specializes in customer satisfaction

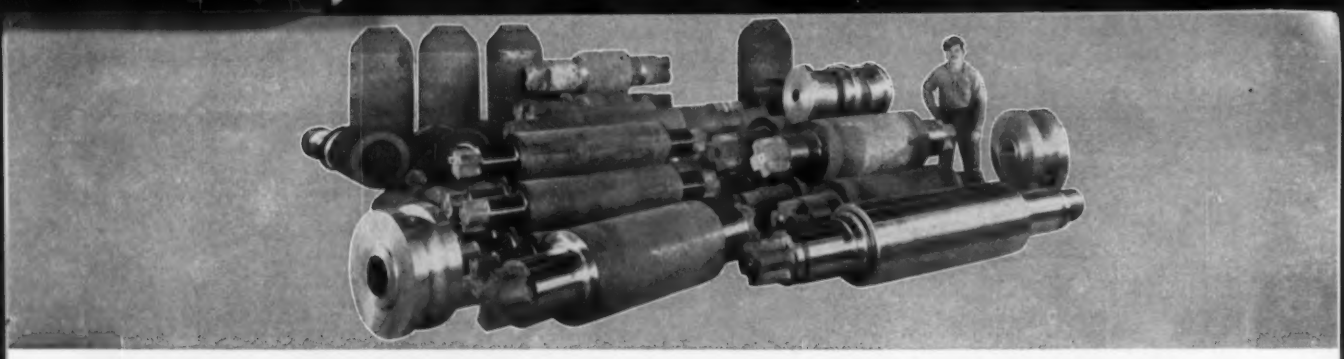
All Anaconda Aluminum Coiled Sheet is custom-rolled to your exacting specifications. In order after order, uniformity of temper is maintained by our precise production control. Modern rolling mills with X-ray gauge controls provide you uniform thicknesses and consistent yield per pound. Workability, even on deep draws, is assured by control of grain size. On narrowest widths, high-speed slitters cut exact widths with precision edges.

Our line includes gauges from .006" to .064"; widths from ⅜" to 54"; alloys: 1100, 1145, 3003, 3004, 5005, 5050, 5052, 5357. And watch for an expanding line of aluminum wrought mill products.

To take advantage of our modern plant flexibility and custom production policy, call our nearest District Sales Office or contact us direct. Write for the new booklet, "Anaconda Aluminum Coiled Sheet", Dept. A-12, 1430 S. 13th St., Louisville 10, Kentucky.

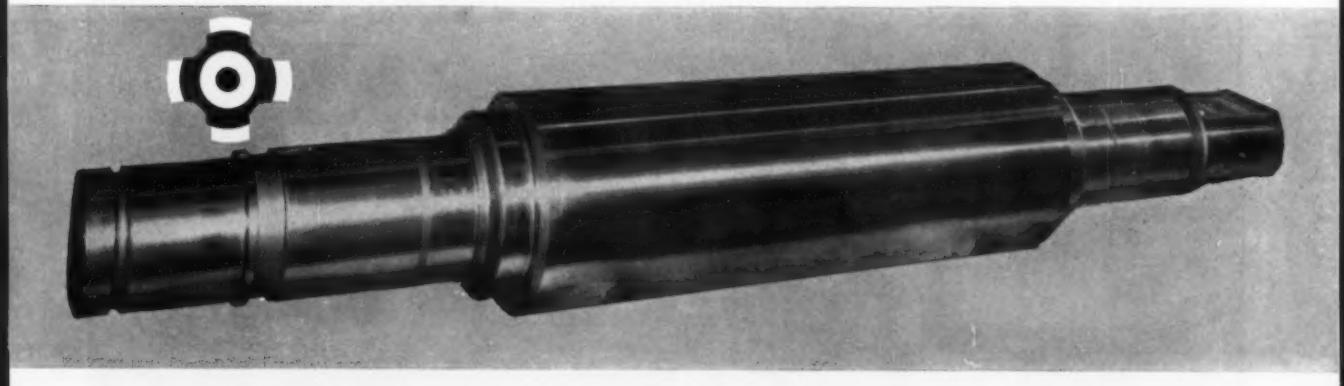
ANACONDA ALUMINUM

Made by Cochran Foil Corporation
LOUISVILLE, KENTUCKY
A SUBSIDIARY OF THE ANACONDA COMPANY



MAGALOY (nodular iron) ROLLS

FROM 7" TO 42-1/2" DIAMETER



TYPICAL APPLICATIONS

MAGALOY GRADE "A"
(Sclerescope Hardness 30-38)
Piercing Mills

MAGALOY GRADE "B"
(Sclerescope Hardness 45-55)
Blooming Mills • Bar & Billet Mills–Roughers
Rod Mills–Roughers • Plug Mills (5½" and over)
Skelp Mills • Hot Sheet Bounce Mills

MAGALOY GRADE "C"
(Sclerescope Hardness 58-65)
Merchant Mills–Leaders and Finishers
Rod Mills–Intermediate Train • Hot Strip Mills
Cont. Bar & Billet Mills–Intermediate & Finishers
Plug Mills (up to 5½")
Tube Mills–Forming & Welding, Sizing, Reelers
Straightening • Skelp Mills • Edging Mills

MAGALOY GRADE "D"
(Sclerescope Hardness 66-70)
For applications requiring higher-than-average strength and hardness penetration.

• MUCH LESS BREAKAGE • BETTER SURFACE ON ROLLED MATERIAL • LOWER COST PER TON ROLLED • WEARING QUALITY OF GRAIN ROLLS • PHYSICALS EQUAL TO CAST STEEL • UNIFORM HARDNESS PENETRATION • SUPERIOR MACHINING PROPERTIES

A SPECIALIST AND A PIONEER IN NODULAR IRON

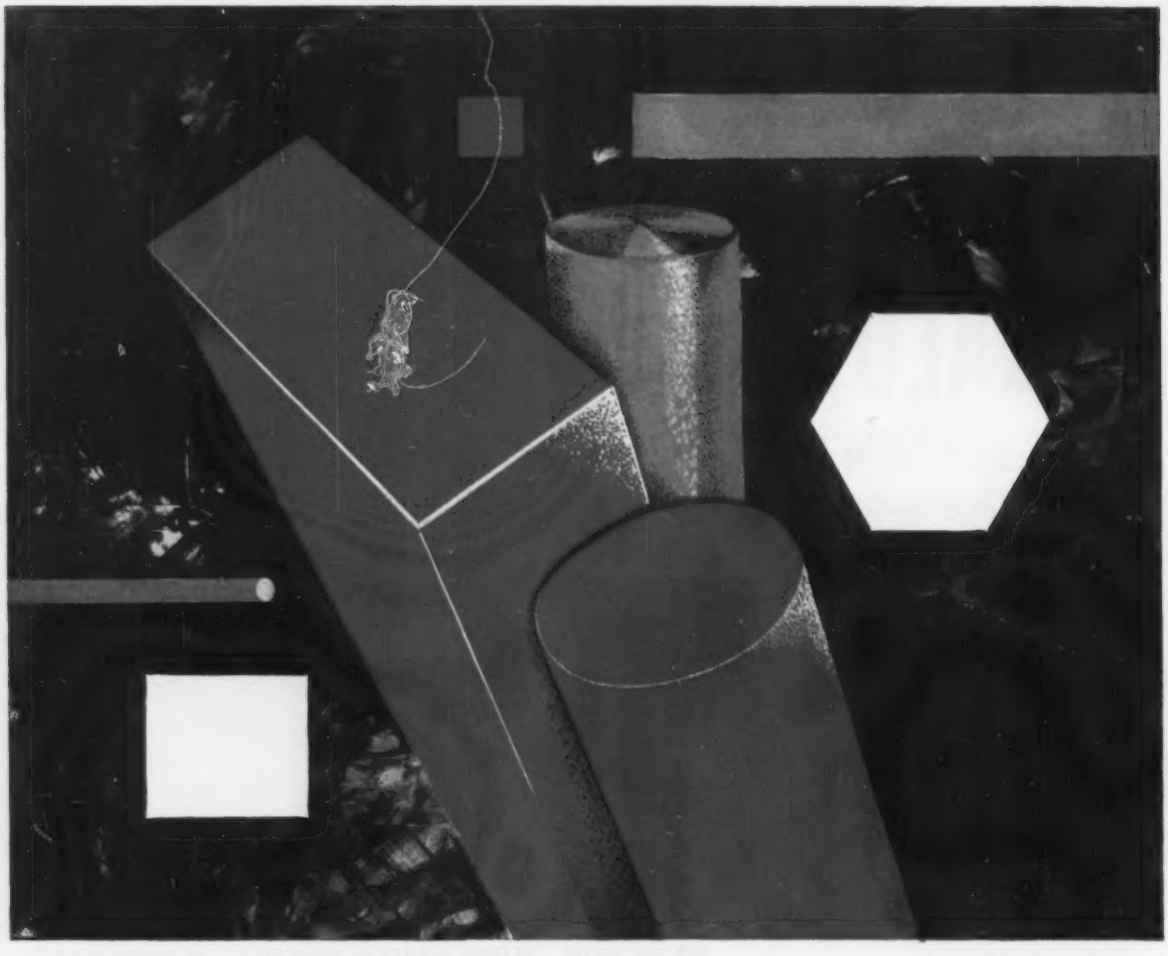
One of the first licensees (1951) for nodular iron, Aetna-Standard's foundry has built a reputation as a specialist in these rolls (trade name – Magaloy). In the making of nodular iron rolls, control of penetration is most important. So is the skill of the foundry to deliver the same uniformity of rolls order after order. As a pioneer and a specialist in nodular iron, Aetna's foundry has an excellent reputation among roll users and suppliers, particularly for penetration and uniformity of rolls.

AETNA • STANDARD

THE AETNA-STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CHILLED AND SAND IRON ROLLS • MOLY CHILLED IRON ROLLS • ASEX GRAIN ALLOY IRON ROLLS • ALANITE GRAIN, NICKEL CHILL (A-B-C-D) • RAIL FINISHING ROLLS • MAGALOY ROLLS • TUBE MILL ROLLS & RINGS



Use quality USS Carilloy Steels

...available at your steel service center

The wide distribution of USS Carilloy Steels is your guarantee of instant availability. So, you can be certain of prompt, efficient delivery when you order USS Alloy Steels from a steel service center.

Plan now to combine the production-boosting benefits of a steel service center with a full line of quality-controlled products from United States Steel. For instance, you can get these USS Carilloy Steel products at your nearby steel service center: blooms, billets, slabs, bars, bar shapes, spring flats, plates, sheets, strip, special sections, structural shapes . . . any form, specification, condition or quality you need.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order alloy steel from your steel service center, be sure to specify *USS Carilloy Steels.*

USS and Carilloy are registered trademarks

AMERICAN STEEL WAREHOUSE ASS'N.

USS United States Steel

"There's a price tag on profits . . ."

. . . and that price tag is timely preparation! During the past months, I've talked with leading manufacturers throughout the country. These men agree that the so-called "recession" is already on the way out. In fact, most expect a 20 to 35% sales increase from 1958 to 1961!

To get our share of this big increase in sales and profits, we must be ready to produce with greater efficiency in an intensely competitive market. This demands the latest and finest machine tools and other manufacturing equipment ...and the time to invest in this equipment is right now! Actually, important savings can be realized by investing at this time...before equipment costs go up, as they must in a fast-expanding economy. And finally, it's plain common sense to re-equip now, before demands for all-out production catch us unprepared.

We at Pratt & Whitney and Potter & Johnston are so convinced these conclusions are right that we are continuing our multi-million-dollar modernization program to prepare ourselves for the industrial growth we know is coming. We believe this is the best possible way to insure our own future profits . . . and contribute to a healthy national economy.

Sincerely,

E. P. Gillane

Edward P. Gillane, President

FIRST CHOICE FOR ACCURACY • MACHINE TOOLS • GAGES • CUTTING TOOLS

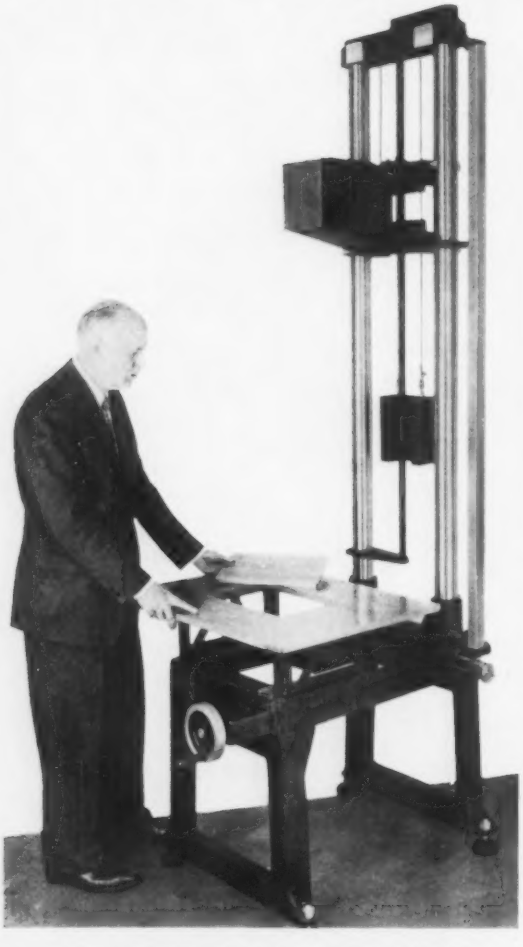
PRATT & WHITNEY

COMPANY, INCORPORATED

WEST HARTFORD 1, CONNECTICUT

sales "ZOOM"

when your product offers new precision and efficiency...



The Warren C. Portman Company uses the Saginaw b/b Screw to smoothly and accurately raise and lower the camera carriage on its new tilting, animation and special effects camera stand.

with the Saginaw Screw

"WE'VE FOUND THAT THE SAGINAW SCREW IS A DEFINITE SALES FEATURE in our new special effects camera stand, where precision control and smooth operation is essential to 'Zooms' and other special motion picture effects," *says Mr. Warren C. Portman, Warren Conrad Portman Company, photographic equipment manufacturers.*

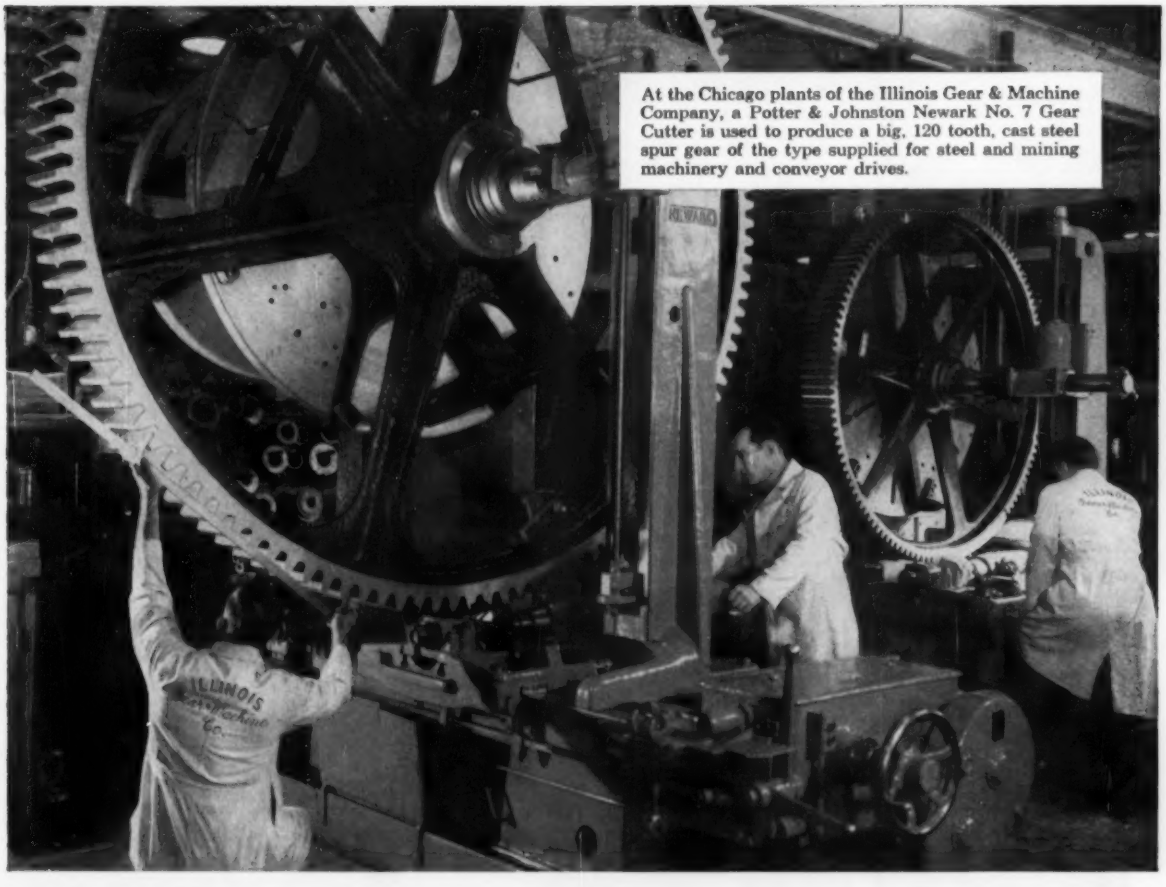
A more profitable sales picture can zoom into focus fast . . . when you do as the Portman Company has done: switch from a high-friction acme screw to the virtually frictionless Saginaw b/b Screw for greater Sales Appeal!

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with over *90% efficiency* is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give *your* products that vital new Sales Appeal you're looking for right now. To find out, write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan —*world's largest producers of b/b screws and splines.*

Give your products NEW SALES APPEAL... switch to the Saginaw ball bearing Screw

WORLD'S MOST EFFICIENT ACTUATION DEVICE



At the Chicago plants of the Illinois Gear & Machine Company, a Potter & Johnston Newark No. 7 Gear Cutter is used to produce a big, 120 tooth, cast steel spur gear of the type supplied for steel and mining machinery and conveyor drives.

For Speed . . . Accuracy . . . Economy . . .

ILLINOIS GEAR & MACHINE COMPANY USES NEWARK AUTOMATIC GEAR CUTTERS . . .

for spur gears with diameters ranging from ¾" to 126"

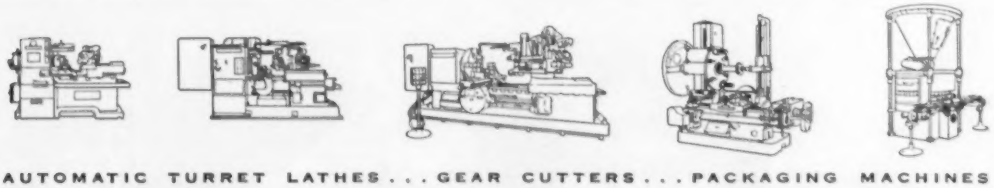
CHOICE OF THE SPECIALISTS WHO *KNOW*

. . . P&J-Newark Gear Cutters combine speed, accuracy, dependability and economy. Outstanding features include: power and rigidity for fast, heavy duty cutting; quick, easy machine setup; fully automatic operation that assures maximum output and lowest per-piece costs; and the exclusive Newark "Master Wheel" indexing mechanism, guaranteed for accuracy.

Available in four models with spur gear diameter capacities ranging from ¾" to 126".

SEND NOW FOR COMPLETE INFORMATION

. . . and see how a P&J-Newark can bring new efficiency to your gear cutting operations. Write now for your copy of Bulletin No. 157 . . . or to arrange for one of our representatives to visit you and provide facts and recommendations. Potter & Johnston Company, Pawtucket, Rhode Island.



AUTOMATIC TURRET LATHES . . . GEAR CUTTERS . . . PACKAGING MACHINES

POTTER & JOHNSTON

SUBSIDIARY OF PRATT & WHITNEY COMPANY, INC.

PRECISION PRODUCTION TOOLING SINCE 1898

Bob showed them a new product that ended rust on work and tools–

STANDARD Special Transparent Coolant

A CASE STORY ABOUT THE ADAMS COMPANY, DUBUQUE, IOWA

Before Standard Oil lubrication specialist Bob Wenger told The Adams Company management about Standard's SPECIAL TRANSPARENT COOLANT, there had been considerable trouble with rusting of work and machines in the plant. There had also been trouble with deposits on the ways of the grinding machines. Rust occurring on parts being processed was resulting in damage and even losses. All of this has been changed.

"Since we changed to your SPECIAL TRANSPARENT COOLANT, we have not had any rusting or deposits on our machine tools, and this product has eliminated the rusting problem on parts being processed through our plant," says Harlow Adams, president of the company.

The Adams Company found they received important additional benefits as well. Operators could now see their work clearly. There was less wheel loading. Because the coolant didn't foam, more of it stayed on the wheel resulting in cooler operation. Faster cuts were obtained with finer wheels. Finer wheels gave better finishes. Periods between dressings were extended. Work ran cooler and tolerances were maintained.

Research, development and more than two years of field testing have gone into Standard's SPECIAL TRANSPARENT COOLANT. This is the pay-out to you on the research done by Standard Oil to bring you better metalworking products. Find out more about Standard's SPECIAL TRANSPARENT COOLANT. Call your nearby Standard Oil lubrication specialist in any of the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.**

Bob Wenger (right), Standard Oil lubrication specialist, and John Charles Uthe, grinding room foreman, inspect grinding operation which uses new Standard's SPECIAL TRANSPARENT COOLANT. Bob Wenger is well qualified to go into the shop and make lubrication recommendations. He has been doing this sort of work for nine years. He has an engineering degree from Iowa State College and, in addition, has completed the Standard Oil Sales Engineering School.

Quick facts about

Special Transparent Coolant

- Clear, transparent fluid.
- Able to control corrosion and rust on work and machines.
- All chemical. Does not support bacteria growth.
- Unaffected by humidity.
- Nonfoaming.
- Fire resistant.
- Odorless.

You expect more from **STANDARD** *and get it!*

No rust. Shaft ground with Standard's SPECIAL TRANSPARENT COOLANT shows no rust on inspection by A. T. Murphy, General Superintendent, Harlow Adams, President, and Bob Wenger, Standard Oil lubrication specialist.

NEW: ***Man-made Giraffe***

Unique Aerial Platform Moves On Cylinders Made From Pittsburgh Tubes

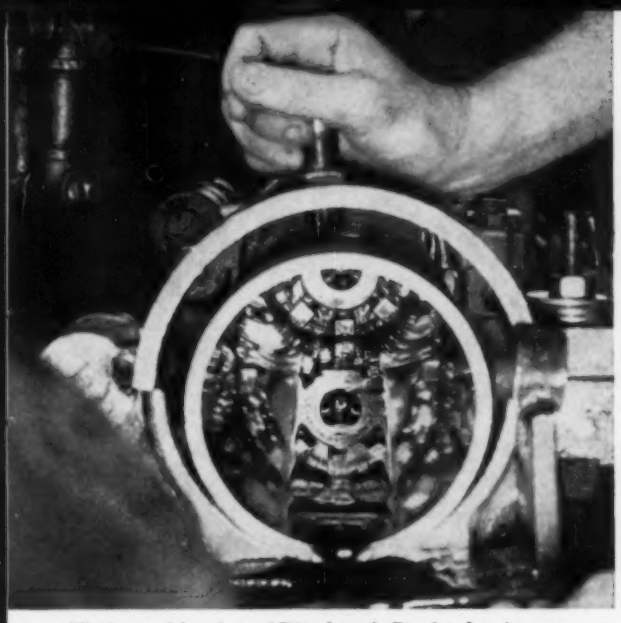
Giraffes are big business at Pitman Manufacturing Company.

Not the giraffes of the animal kingdom but ingenious hydraulic aerial platforms. These mechanical "Giraffes" are used for anything from de-icing a giant Air Force bomber to fighting fires in tall buildings.

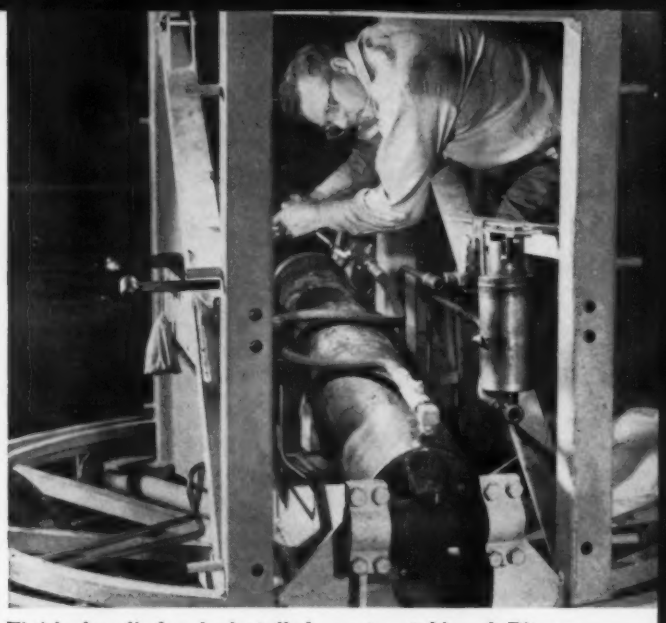
Pitman's truck-mounted Giraffes depend on hydraulic cylinders made exclusively of Pittsburgh Steel Company's seamless mechanical tubes. Giraffes are finding wide acceptance in varied industries because:

- Workmen can reach heights up to 65 feet in a fraction of the time and cost required by other methods. And their tools go up right with them.
- The roomy, insulated platform carries two men who can control all platform movements with controls duplicating those on the ground.
- The aerial platform can rotate a full 360 degrees in either direction in a radius as great as 35 feet.
- The largest of three models permits the 31-foot upper boom to move in a 160-degree vertical arc. The 23-foot lower boom can move in an 80-degree arc, so workmen can reach the exact spot they want.
- Hydraulic outriggers, operated independently, are raised or lowered by moving hand levers at side of truck.

Since hydraulic cylinders are vital to safe, dependable, economic operation of the Giraffe, Pitman makes its own cylinders with great care.



Horizontal honing of Pittsburgh Steel tubes is an exacting process. Inside the tube, you can see part of the hones. At the end of the tube, the hones are mirrored on polished steel.



Finished cylinder is installed on turntable of Pitman Giraffe. This cylinder supports and moves the lower boom. Completed Giraffe will be mounted on truck supplied by customer.

All Giraffe hydraulic cylinders are made from tubing produced by the Tube Mills of Pittsburgh Steel Company and sold by the Kansas City distributor, Metal Goods Corporation.

"We get high production from tubes because Pittsburgh tubes hold to close tolerances," declared Arthur Moore, vice president and general manager of Pitman Manufacturing. He added:

"We give Pittsburgh Steel tubes credit for cutting our scrap losses. But economy isn't all we're thinking of. Since we never forget that men's lives depend on our cylinders we build a safety factor of at least three into every cylinder. We've never had a burst cylinder or a cylinder wall failure with Pittsburgh tubes.

"Finally, Pittsburgh Steel gives us the kind of service we like."

Mr. Moore said engineers from Pittsburgh Steel helped analyze the company's tube problems, suggested some design changes and took Pitman's prints back to the mill to make tubing which exactly fills the bill.

"The service which Pittsburgh Steel instituted ended our tubing problems," said Mr. Moore. "Our cylinders have been very satisfactory ever since."

Whether you make hydraulic cylinders or use seamless mechanical tubing in another application needing uniformity, close tolerances and engineering help, you can profit by Pitman's experience.

Start today by getting in touch with trained help available through any Pittsburgh Steel Company District Office or from one of the Pittsburgh Steel distributors listed at right.

Fire-fighting is just one of many uses for the Pitman Giraffe. These firefighters can move their platform to any given spot quickly and easily without losing time when time counts most.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California

Chicago Tube & Iron Company
Chicago, Illinois

Cleveland Tool & Supply Co.
Cleveland, Ohio

Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada

Edgcomb Steel Company
Philadelphia, Pennsylvania

Gilmore Steel & Supply Co.
San Francisco, California

Earle M. Jorgensen Co.

Perry Kilsby, Inc.
Los Angeles, California

Mapes & Sprowl Steel Co.
Union, New Jersey

Metal Goods Corporation
St. Louis, Missouri

Miller Steel Company, Inc.
Hillside, New Jersey

A. B. Murray Co., Inc.
Elizabeth, New Jersey

C. A. Russell, Inc.
Houston, Texas

Ryerson, Joseph T. & Son, Inc.
Chicago, Illinois

Solar Steel Corporation
Cleveland, Ohio

Steel Sales Corporation
Chicago, Illinois

Tubular Sales
Detroit, Michigan

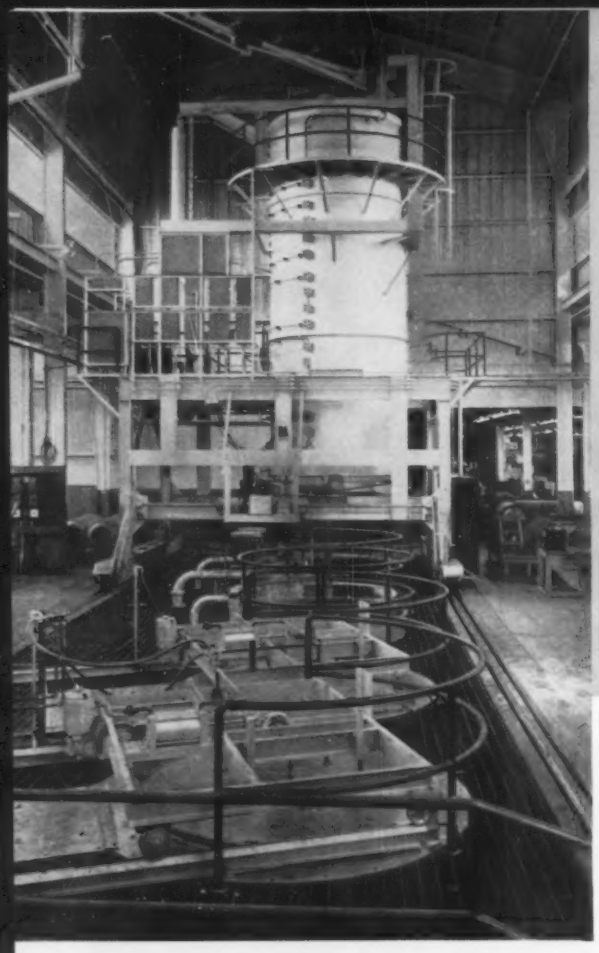
Ward Steel Service Company
Dayton, Ohio

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta, Chicago, Cleveland, Dallas, Dayton, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Tulsa, Warren, Ohio



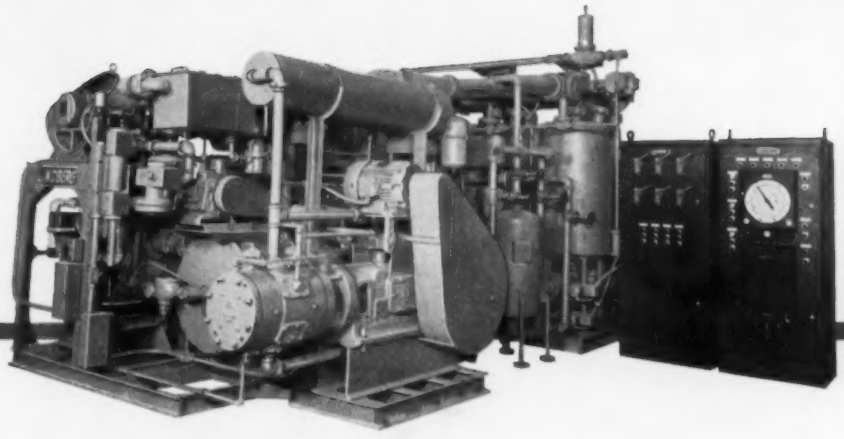
This year alone Lindberg has developed five major improvements in the application of heat to industry

Improved Gantry type hardening furnace for missiles. Latest development of standard Gantry type, this huge furnace provides more economical, faster production and improved metallurgical qualities in treating missile parts. The installation consists of the electric, controlled atmosphere, Gantry type furnace and two draw furnaces, a hot water wash tank, a salt bath quench and a nitrogen generator. The Gantry type furnace moves under power over the entire installation to load or unload at any of the pit stations. Both design and installations by Lindberg.

Not so many months back business wasn't booming in the metalworking field. But through this period, Lindberg went steadily ahead with its policy of helping make business better by constantly seeking better ways to apply heat to industry. Fortunately, Lindberg has the research experts, the designers, the engineers to implement this policy. As evidence, shown on these pages are five major Lindberg developments of the past twelve months. In their respective spheres these offer industry more efficient, more productive, more economical industrial heating equipment.

Induction Aluminum Billet Heater. This exclusive new Lindberg induction billet heater provides aluminum extruders with an accurate, efficient solution to a difficult production problem. It features "Metered BTU's", an improved control system for heating aluminum billets. The heating rate of billet is controlled and each billet automatically delivered to the die-casting machine at the exact temperature required for most efficient extrusion.

Full information on any of these new Lindberg developments is available from Lindberg Engineering Company, 2452 W. Hubbard St., Chicago 12, Ill.



Hyni Nitrogen Generator. This Lindberg Hyni nitrogen atmosphere generator is the latest development in gas processing and assures nitrogen of higher purity than has ever before been achieved by other processes. It is the first unit to provide low cost, high purity nitrogen by a dry, completely automatic process. It is suitable for any application where a high nitrogen, CO_2 free, dry atmosphere is required. The unit functions automatically, and once the generator is started, the entire operation is completely automatic and continuous.

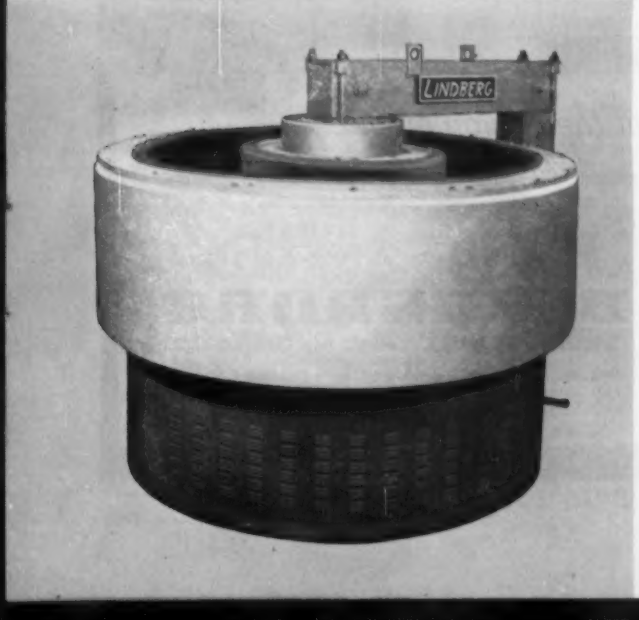
Over the years Lindberg has consistently pioneered major advancements in industrial heating equipment . . . the famous Cyclone furnace, applying the first 100% forced convection heating principle . . . the first high temperature (2200° F.) endothermic generator . . . the development of controlled atmosphere generators, the creation of dew point equilibrium curves to establish proper atmosphere values and the exclusive Lindberg Carbotrol to maintain these values automatically . . . the "dimple" vertical radiant tube for fuel fired furnaces . . . the revolutionary CORRTHERM electrical heating element. Lindberg equipment and Lindberg planning can help you find the most effective answer to any problem of applying heat to industry. We cover the field, heat treating, melting and holding, brazing, enameling furnaces, ceramic kilns, high frequency units, and are in the ideal position to recommend just the type of equipment most suitable for your needs. Consult your local Lindberg Field Representative (see the classified phone book) or get in touch with us direct.

Lindberg Engineering Company

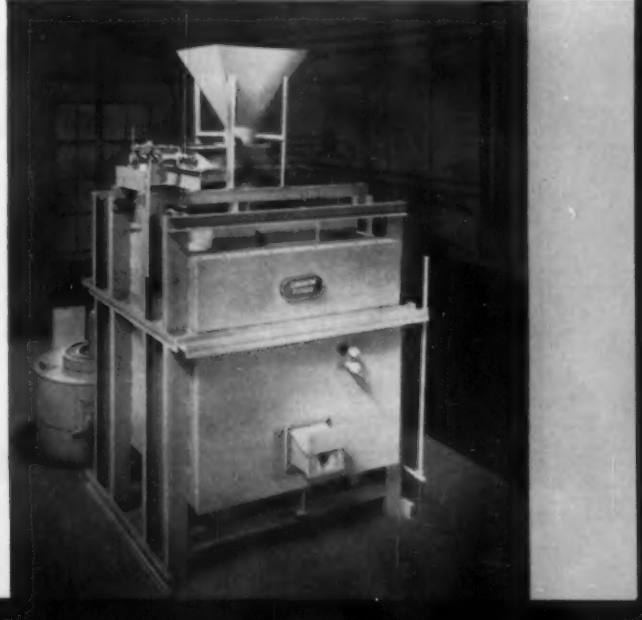
2452 West Hubbard Street, Chicago 12, Illinois

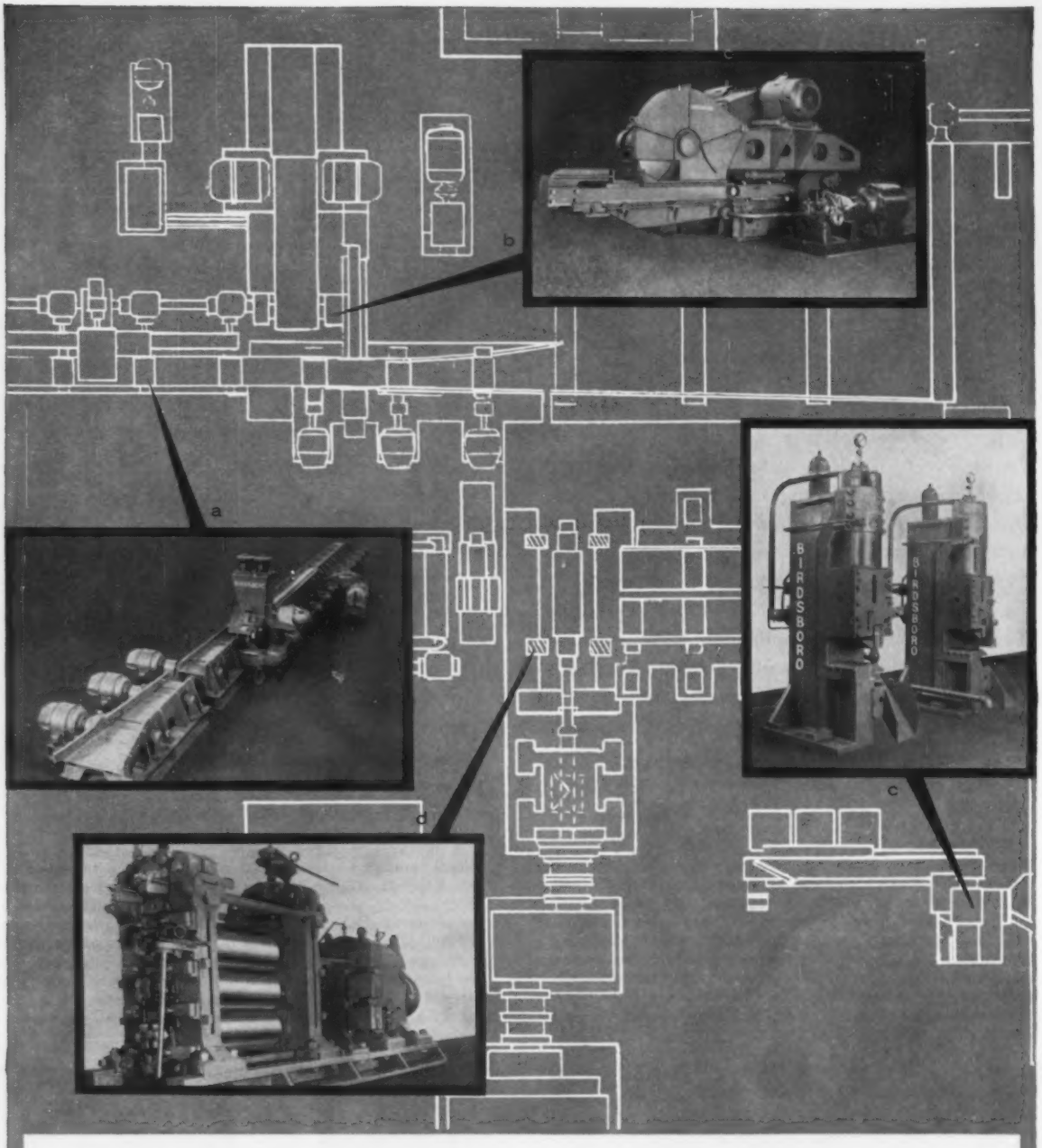
Los Angeles Plant: 11937 S. Regentview Avenue at Downey, Calif.

Induct-O-Ring Rotary Salt Bath Furnace. Offering for the first time an electric salt bath furnace that can be shut down over night or week end and regain efficient operating temperature quickly. Positive quality control is provided by rotary action of furnace and variable speed drive which insure exactly same time in bath for all parts. Gives precise temperature uniformity and control unequalled by any other salt bath furnace design. Offers greatly lowered operating, maintenance and initial investment costs compared with standard externally heated pot or electrode types.



Electric Controlled Atmosphere Dry Hearth Melting Furnace. This new Lindberg-Fisher Melting Furnace operates electrically and oxidation of aluminum, or melt loss, is reduced because the entire system can be pressurized with atmosphere. The only oxides incurred are those from the surface of the scrap, as charged. The furnace contains a sloping silicon carbide dry hearth which directs the molten aluminum through a covered trough into the companion holding furnace. Substantial savings in lower melt loss and maintenance is low. Particularly applicable for scrap with steel inserts.





New production economies **start** *at the design stage . . .*

At Birdsboro modern design-engineering helps you attain the production economies you want on the job. That's why we place such importance on the idea stage of every job, and why we can sell "not just machines, but ideas, too." You'll find many competitive advantages in talking to Birdsboro when your next mill machinery job goes into the works.

Main Office, Engineering Department and Plant: Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

Illustrated above is a portion of a completely integrated Birdsboro merchant bar mill.

a. 54" Hot Saw Gauge b. 54" Hot Saw
c. 100 ton Crop Shears d. 16" 3-Hi Mill Stand

MM55-58

BIRDSBORO

STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

Charging-Box Cars . . .

built to last by a company that uses them!

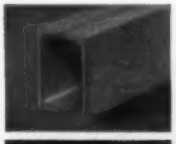
5 unique structural features make them better

Charging-box cars have to take a lot of punishment. And, in the 36 years we have been making charging-box cars for our own use, United States Steel has developed several features in structural design that assure longer life, less maintenance, and dependable service.

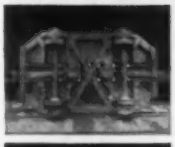
As illustrated in the typical four-box car shown here, the advantages of these design features—plus the rugged durability of all-welded *rolled* steel construction—make any size USS Charging-Box Car a profitable investment.

Our representatives will be pleased to call at your convenience to discuss your requirements for this or any other type of industrial car. Meanwhile, write for our free illustrated booklet—*USS Custom Designed Cars.* United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

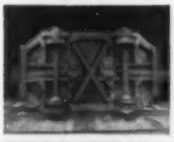
USS is a registered trademark



Box girder construction: Two channel sections, welded toe-to-toe, provide a frame far stronger than the ordinary angle or channel frame. This box frame is used under both the sides and ends of the car.



Double center sills: *Two* channels, back to back, run the entire length of the car. All cross members are welded to these sills, providing superior longitudinal rigidity.



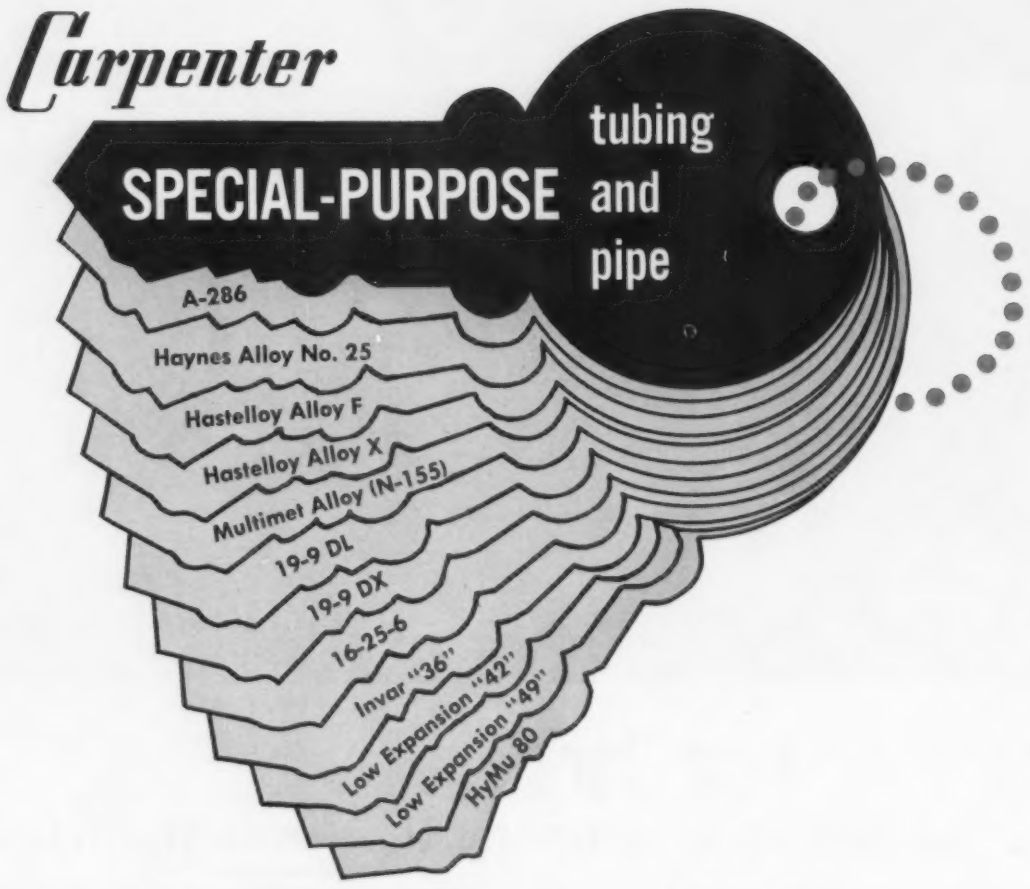
X-frame bracing: These cross braces tie the box girder frame and the center sills together for additional strength and rigidity.

Spring pockets: Over each wheel, pockets are built into the bottom of the frame and "boxed in" on all sides. Coil springs are set into these pockets. This construction permits vertical, but no lateral, movement of the springs.

Long-shanked couplers: Pivot points of couplers are *behind* each axle. This permits turning the car on a short radius curve with less wheel flange pressure than with a short-shanked coupler.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel



12 master keys to many NEW needs

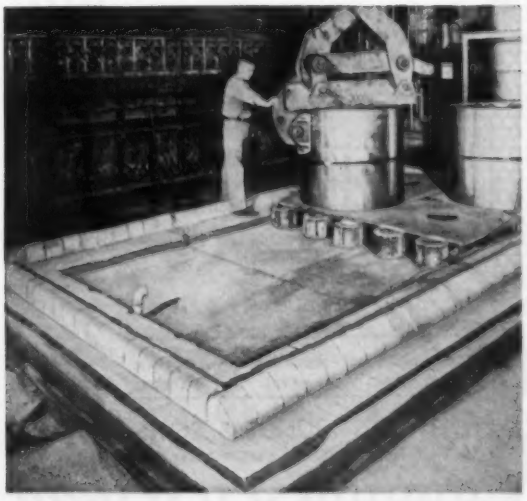
• As fast as new developments in products and equipment create new needs in tubing and pipe for corrosion and heat control, Carpenter is ready with the answers. Whatever it takes, Carpenter makes . . . to meet the challenge of technological progress.

Listed above are 12 Special-Purpose types of Carpenter tubing and pipe that answer today's needs for high-temperature, low-expansion, high-permeability and corrosion-resistant applications. These super-stainless and high alloy grades meet a broad range of tubing and pipe requirements for vital parts of jet aircraft, missiles, rockets, nuclear energy equipment, instruments, electronic devices, process equipment and other advanced developments. Their properties, recommended uses and other technical data are contained in a new bulletin—T.D. 125.

Write for a copy on your company letterhead. Put your special-purpose requirements for tubing and pipe in Carpenter's capable hands by contacting our nearest office. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

Four-stack strip annealing furnace with a capacity of three 30,000 lb coils on a 34 to 36 hr firing cycle, 68 to 78 hr cooling, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. The base, 9" thick hearth and portions of the curb are cast of B&W Kaocrete-A.

B&W Kaocrete-A resists CO disintegration and sand penetration at Granite City Steel



B&W Kaocrete-A is cast in the hearths and curbs of these furnaces where firebrick refractory was previously used.

Granite City Steel states that both bases have been in use for over three years without any disintegration resulting from the CO atmosphere. In addition, the monolithic structure of this B&W castable refractory eliminates the destructive effects produced by sand penetrating the joints and cracks of firebrick hearths.

For further information on B&W's specialized refractory castables, write for Bulletin R-35.

Strip annealing furnace with a capacity of 70 to 80 tons per charge on a 24 to 48 hr firing cycle, 48 to 96 hr cooling cycle, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. 4½" lining of B&W Kaocrete-A is used on hearth and curbs.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick
B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars
B&W Silicon Carbide • B&W Ramming Mixes • B&W Kaowool

BABCOCK & WILCOX
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R-595

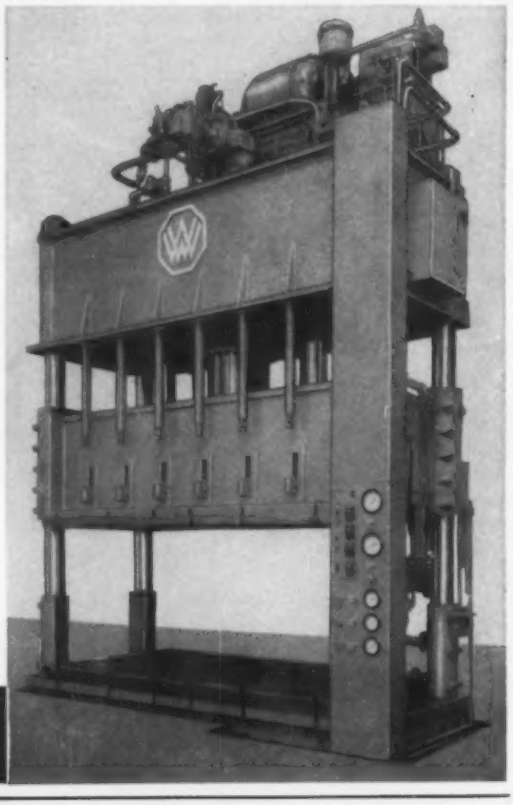
WILLIAMS-WHITE PRESSES
Custom Built to meet your Production Requirements

The 750-ton Hydraulic Press illustrated, in use in a railroad car shop, is typical of WILLIAMS-WHITE machines built to customers' specifications. It is equipped to handle a variety of forming jobs, with pushbutton controls for automatic operation. It can also be controlled manually. The press has platen area 145" x 72", daylight opening, 79½" and stroke 48".

WILLIAMS-WHITE & CO. bring up-to-date engineering know-how to the design and building of machines to fit **your** production need. Take advantage of our experience to solve your problem . . . today.

REPRESENTATIVES

MISSOURI, St. Louis or Kansas City: Robt. R. Stephens Mach'y Co.
NEW YORK, Buffalo: H. D. Thweatt Co.
OHIO, Cincinnati: Columbus or Dayton: Seifreat-Elstad Mach'y Co.
OREGON, Portland: Allied Northwest Mach. Tool Corp.
PENNSYLVANIA, Pittsburgh: Frank Ryman's Sons
Wynnewood (Phila.): Edw. A. Lynch Mach'y Co.
WASHINGTON, Seattle: Perine Mach'y & Supply Co.
WISCONSIN, Milwaukee: Pagel Mach'y Co.



WILLIAMS-WHITE & Co.
302 EIGHTH ST. • MOLINE, ILLINOIS
PRESSES • BULLDOZERS • BENDERS • PUNCHES • SHEARS

LOOKING FOR
LARGE NUTS?

Then contact Acimet, your dependable source for large nuts, milled from the bar! A large stock of full and jam size nuts starting at 1½ inches are constantly maintained in all standards. Extremely high concentricity is maintained by means of the automatic screw machine method. Any thread size, right or left hand. Commercial steel, SAE 1045 and SAE 4140.

FREE
LARGE NUT BUYERS GUIDE

Send for your copy of the Acimet large nut buyers guide. Contains complete specifications and prices on Acimet heavy semi-finished and new finished hex nuts milled from the bar.

ACIMET MFG. CO.
1446 ROCKWELL AVE. • CLEVELAND 14, OHIO • PRospect 1-5944

MUNDT
PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can *perforate almost any size perforation in any kind of metal or material required.* Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns

TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
50 FAIRMOUNT AVE. JERSEY CITY, N. J.

ARTIST'S INTERPRETATION

There is no substitute for stainless steel in outer space

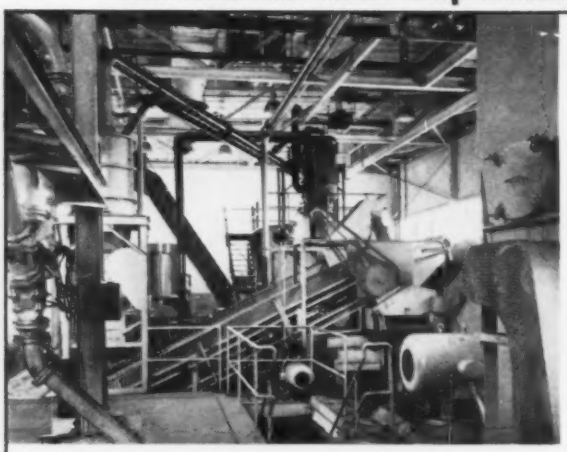
From the intense cold of outer space to the heat of a jet engine, Stainless Steel is the one metal that will stand up. In rockets, missiles and supersonic aircraft, Stainless Steel resists heat, friction and corrosion, has a high strength to weight ratio and maintains its structural integrity under the most severe conditions.

Specify McLouth high quality sheet and strip Stainless Steel. McLouth Steel Corporation, Detroit 17, Michigan.

McLOUTH STAINLESS STEEL

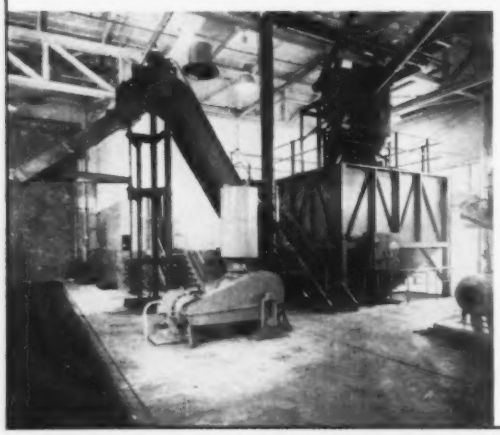
How to Make Chip Handling a Profitable Operation

with National Metal Chip Handling and Oil Reclamation Systems



▲ This view shows the efficient, National-equipped chip room in one of the nation's large automotive parts plants.

▲ Comprehensive chip handling system showing suspended-type continuous chip wringer in foreground.



◀ Storage bin for malleable iron chips received from vacuum-type pneumatic conveyor system. Bin discharges to railroad cars by means of National Combination Horizontal-Vertical Elevating Conveyor.

▶ Storage bin loading crushed dried steel chips into railroad gondola car. Pneumatic Chip-Veyor feed line shown in foreground.

A National system may give you your biggest single cut in costs! Here are quotes from our mail: "Saving $300 daily in scrap handling cost alone!" . . . "Saved $15,850 in 3 months on reclaimed oil!" . . . "$40,000 scrap disposal unit paid off in one year!"

These savings are reported by companies in various types of industry, such as Ford, General Motors, Fafnir Bearing Co., Standard Pressed Steel Co., Chicago Pneumatic Tool Co., Fairfield Mfg. Co., Otis Elevator, and General Smelting Co.

National makes equipment to handle all forms of metal chips and borings . . . steel, stainless steel, cast iron, aluminum, brass or copper. Special equipment has been designed to solve almost every problem in the handling of scrap metals and cutting oils from the large production plant to the job shop operation with a single or group of machine tools.

National Systems are also used for the removal of punch press scrap and the handling of small parts such as cartridge cases, bearing cages, etc.

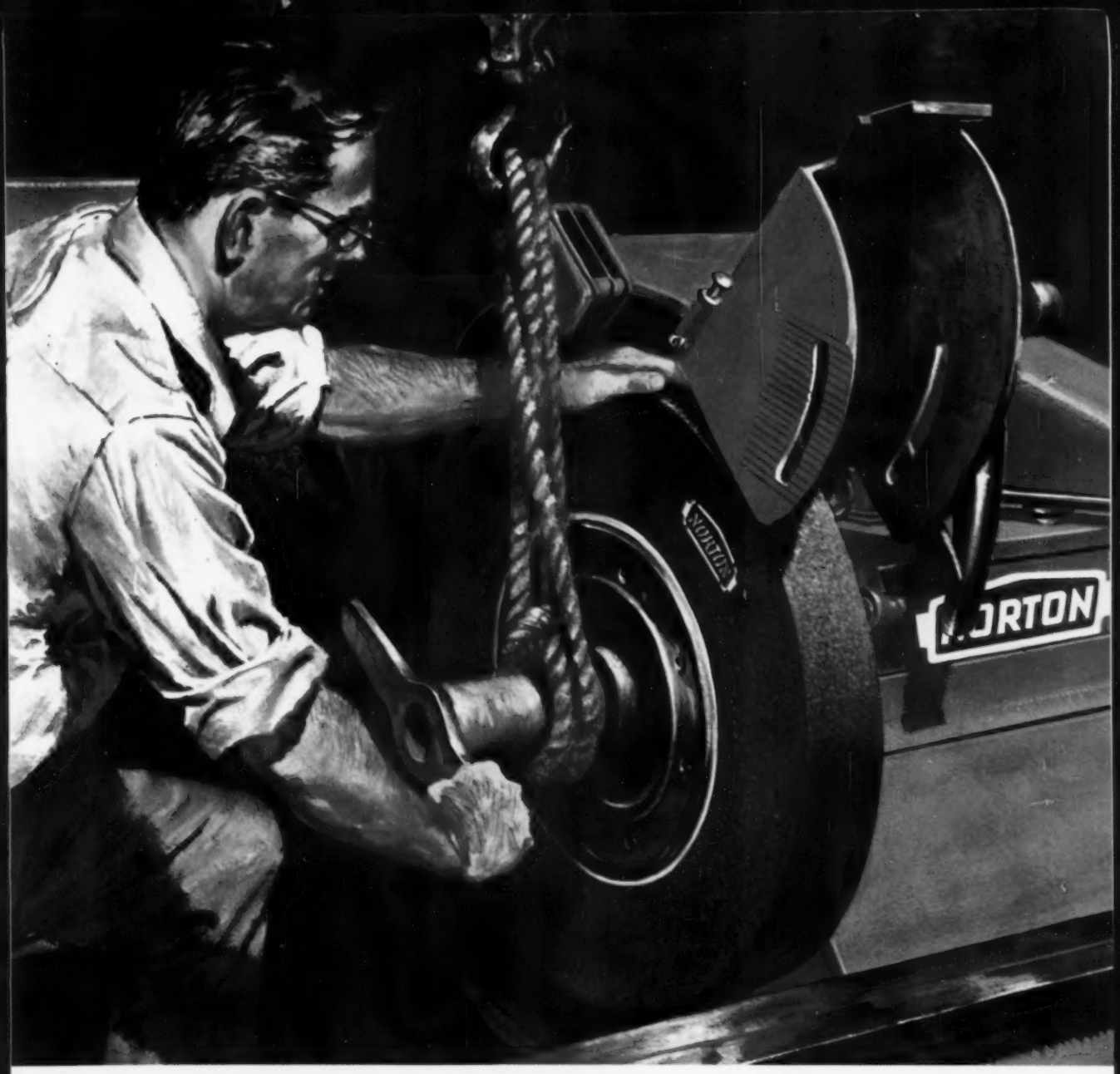
Send for National's free Bulletin C-56 today . . . consult our catalog in Sweet's Machine Tool Catalog File . . . or contact our nearest representative.

National CONVEYORS COMPANY INC.
FAIRVIEW, BERGEN COUNTY, N. J.
WHitney 5-9136

Also manufacturers of **Ash Conveyor Systems** (Send for Bulletins P57-A and H57) and **Pneumatic Systems** for handling granular materials (Bulletin P-58G)

REPRESENTATIVES

ATLANTA 3, Ga. — P. H. Nichols & Co. — 400 Whitehead Bldg. • **BALTIMORE 18, Md.** — Lamb Engineering Co. — 2125 Maryland Ave. • **BOSTON 94, Mass.** — Mills Engineering Co., Inc. — 300 First Ave., Needham Hts. • **BUFFALO 2, N. Y.** — Charles P. Hague, Inc. — 625 Delaware Ave., Rm. 202 • **CHARLOTTE 7, N. C.** — E. L. Mountcastle — 2617 Selwyn Ave. • **CHICAGO 4, Ill.** — Burke & Colston (Ash) — 53 W. Jackson Blvd. • **CHICAGO 5, Ill.** — Mayer & Oswald (Chip) — 407 S. Dearborn St. • **CINCINNATI 27, Ohio** — Smith E. Hughes — 3716 Petoskey Ave. • **CLEVELAND (Lakewood 7), Ohio** — J. Harry Haywood — 12031 Edgewater Dr. • **DETROIT (Ferndale 20), Mich.** — Beltaire-Drissen — 570 Livernois Ave. • **HARTFORD, Conn.** — Dee Engineering Co. — Cromwell, Conn. • **HOUSTON 5, Texas** — Industrial Handling Engineers — 1200 Bissonnet • **KANSAS CITY 12, Mo.** — W. C. Carolan Inc. — 612 W. 47th St. • **LOS ANGELES 13, Calif.** — W. F. Huff and Co. — 417 S. Hill St. • **PHILADELPHIA, Pa.** — C. V. McQuary — P.O. Box 52, Cheltenham, Pa. • **PITTSBURGH 29, Pa.** — Gibson & Stanier Engineered Products — P.O. Box 9742 • **ST. LOUIS 22, Mo.** — Medor, Inc. — 10408 Manchester Ave.



He's equipping this machine with the "Touch of Gold"

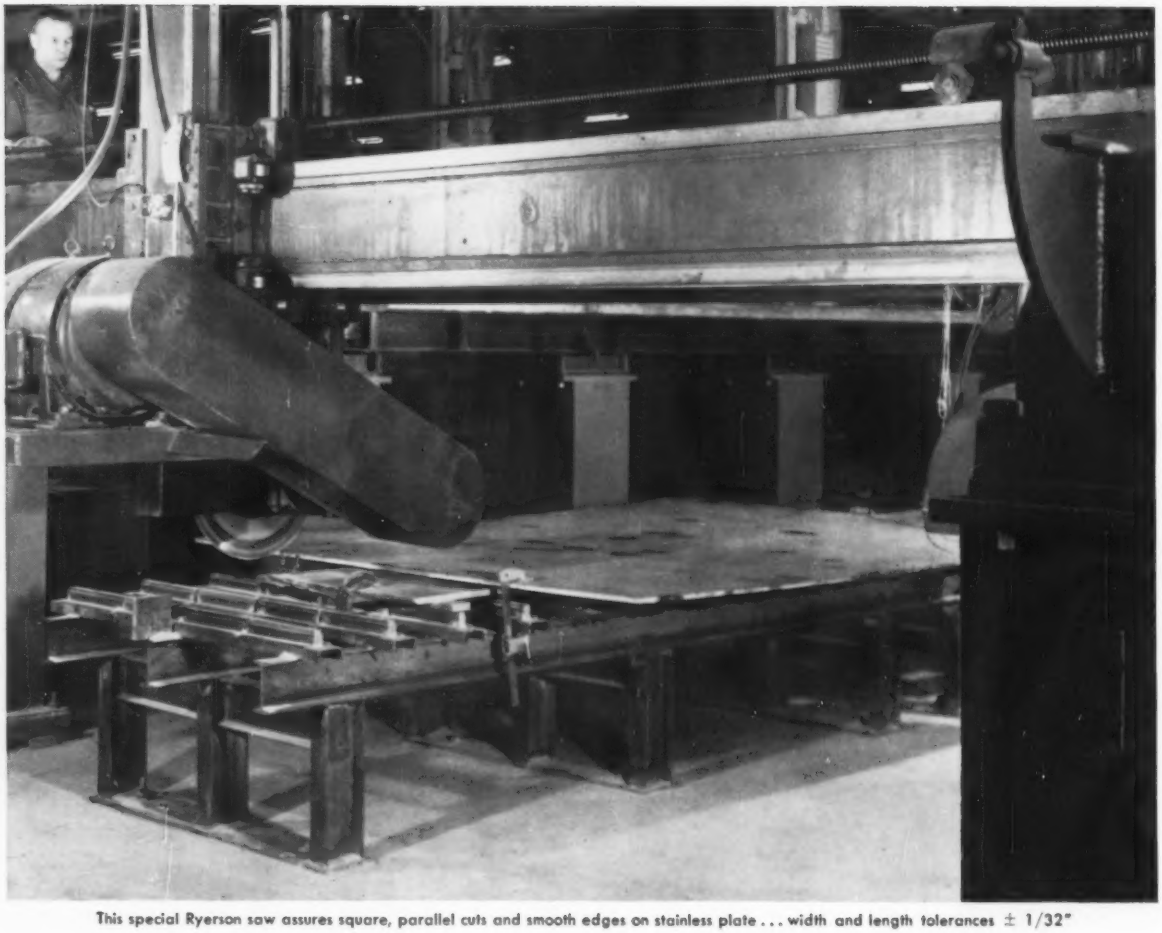
Grinding is always a profit-producing step in metal working. That's why the grinding wheel itself is so important — and why Norton world leadership in grinding is important to you when you specify grinding wheels.

Because a Norton wheel, contacting the work in process, is always adding the "Touch of Gold" . . . creating value and usefulness through improving the fit and finish of the product. The right wheel for each job is the key to having each job done right . . . which is the real secret of profitable production. And Norton stocks more than 200,000 types and sizes of grinding wheels to make your "Touch of Gold" quickly available. Plants and distributors all around the world.

NORTON COMPANY, General Offices, Worcester 6, Massachusetts.

NORTON
ABRASIVES

Making better products . . . to make your products better



This special Ryerson saw assures square, parallel cuts and smooth edges on stainless plate . . . width and length tolerances ± 1/32"

The plus you get when it's stainless from Ryerson

WIDEST SELECTION—No other source comes close to offering a comparable range of stainless types, shapes and sizes—so you can always get exactly what you need.

UNIQUE SERVICE—Big-capacity abrasive saw assures the ultimate in cutting accuracy . . . and shearing, hack-sawing and flame-cutting facilities also meet exacting requirements.

EXPERT TECHNICAL HELP—Ryerson specialists are always ready to work with you on any problem of stainless selection and fabrication.

No wonder more people buy stainless from Ryerson than from anybody else.

Machine-cut stainless rings and discs from Ryerson are *finished* parts to your specifications, priced below your own costs.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND Steel Family

Principal Products: Carbon, alloy and stainless steel —tubing, bars, structurals, plates, sheets —aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

PRESIDENT EISENHOWER WILL BE hard-pressed to hold the line on spending against the new Congress. Washington observers say it looks as though some ambitious spending programs will materialize.

OUTLOOK FOR GOVERNMENT SPENDING: More money appropriated for public housing, rivers and harbors, dams, roads, airports, and relief money for so-called distress areas.

EAST-WEST TENSIONS point the way to still greater spending for U. S. and global defenses, say government insiders. State Dept. experts predict things will get worse before they get better. Congress is expected to "buy" new defense budget of about $42 billion, compared with current $40.9 billion.

FARM INCOME WILL DROP anywhere from 5 to 10 pct in 1959, according to U. S. Dept of Agriculture. A drop of 10 pct would pull net farm income back to 1957 level of $10.8 billion. Expected dip is based on probable lower farm prices, further increases in costs, and an end to soil bank payments.

BOOKINGS OF FABRICATED structural steel were up in October, the fifth straight month of increase. So reports the American Institute of Steel Construction. October orders were 43 pct greater than in the same month last year.

REINFORCED PLASTICS SALES SET a new record of 185 million pounds in 1958. This represents a 10 pct increase over '57 sales, reports the Society of the Plastics Industry. Boats, construction, consumer products, transportation, aircraft, and missiles accounted for 76 pct of the total.

RAILROADS LOOK FOR UPTURN and better business in 1959. But Daniel P. Loomis, president of the Assn. of American Railroads, says the business pickup will not solve the railroads' problems. He reiterates the need for legislation to place the rails on a competitive footing with other forms of transportation.

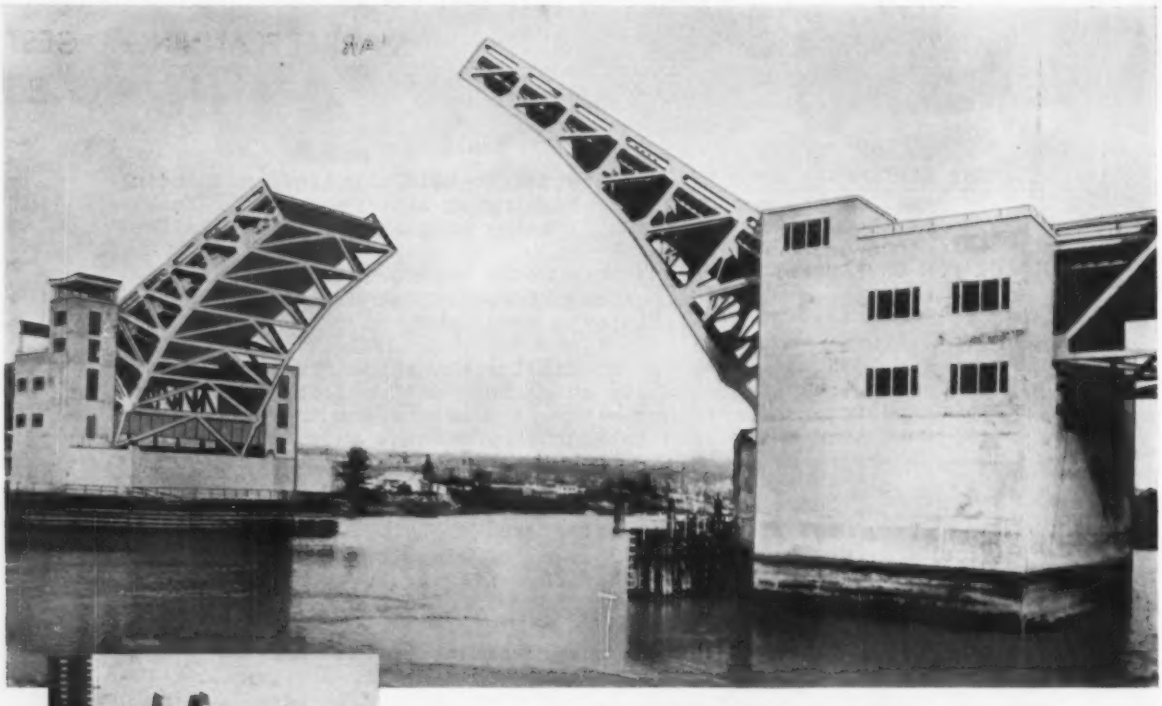
AMERICAN INDUSTRY WILL BOOST research budgets in 1959. A survey by American Management Assn. indicates that research outlays next year will better those of '58 by about 6 pct. Research spending this year is running about 4 pct ahead of '57.

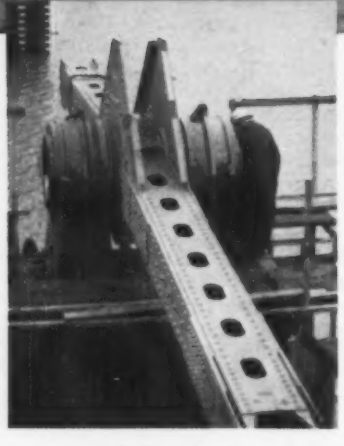
BEARING MAKERS REPORT THEIR order books are starting to fatten. An IRON AGE survey of bearing makers notes a definite turn for the better. Demand from appliances and automotive leads the way.

STEEL IMPORTS NOT ONLY ARE increasing, they're spreading out to include new products. Steel industry sources say the Japanese are competing hard for plate business. European and Japanese mills are taking a larger share of barbed wire, nails, and fencing. The Japanese also are importing larger quantities of aluminum products.

CONSTRUCTION CONTRACTS SIGNED in October topped any October on record. F. W. Dodge Corp., the construction authority, says the total of $3.3 billion was 27 pct higher than October 1957. This was the sixth straight month that a new high was set.

A MAJOR NEW MARKET FOR steel and aluminum could be in the making. It's in the area of "containerization." Industry sources say demand for giant-sized metal containers is gaining momentum. A minimum of 4000 van-size metal containers up to 34 ft long is on order. Steamship lines, railroads, and trucking lines are in the market.





SEATTLE BRIDGE *Moves on* MESSINGER BEARINGS

Eight Messinger Pillow Blocks, four on each side, contribute to the smooth operation of the First Avenue South Bridge in Seattle, Washington.

Each Pillow Block measures 66.00" x 50.00" x 26.63". Each 20.00" diameter shaft turns on twenty-five rollers which are 3.00" diameter x 17.50" long.

Insert, above, shows one of the four twin Pillow Block "hinges" of the bridge during construction.

This is another example of the wide range of heavy-duty applications for Messinger Bearings. *Write for catalog.*

Smoothing Industry's Pathway ...*for Nearly Half a Century*

MESSINGER BEARINGS, INC.

D STREET ABOVE ERIE AVENUE, PHILADELPHIA 24, PENNA.

BALL AND ROLLER BEARINGS • FEATHERWEIGHT TO HEAVYWEIGHT

Behind the Growing Market For Ductile Iron

Some foundries learned the hard way, but the experience is now paying off.

Production could hit half million tons in '59, says Founders' Don Workman.—By T. M. Rohan.

▪ When first commercial heats were poured 10 years ago, foundries embraced ductile iron as the answer to their prayers for a high-strength, easily-made material. Many foundrymen felt production involved little more than throwing some magnesium alloy into a ladle of molten iron. But it wasn't that easy.

Here's what happened to one Ohio foundry:

A Costly Mistake — This firm made a 3,000 lb fast-reversing high load clutch gear for a dredge from ductile. It was shipped to a dredging site in South Africa, where it promptly failed in service, tying up the operation. The irate operators raised such a howl that a new clutch part was made of conventional materials and had to be air expressed to South Africa at a monumental freight rate.

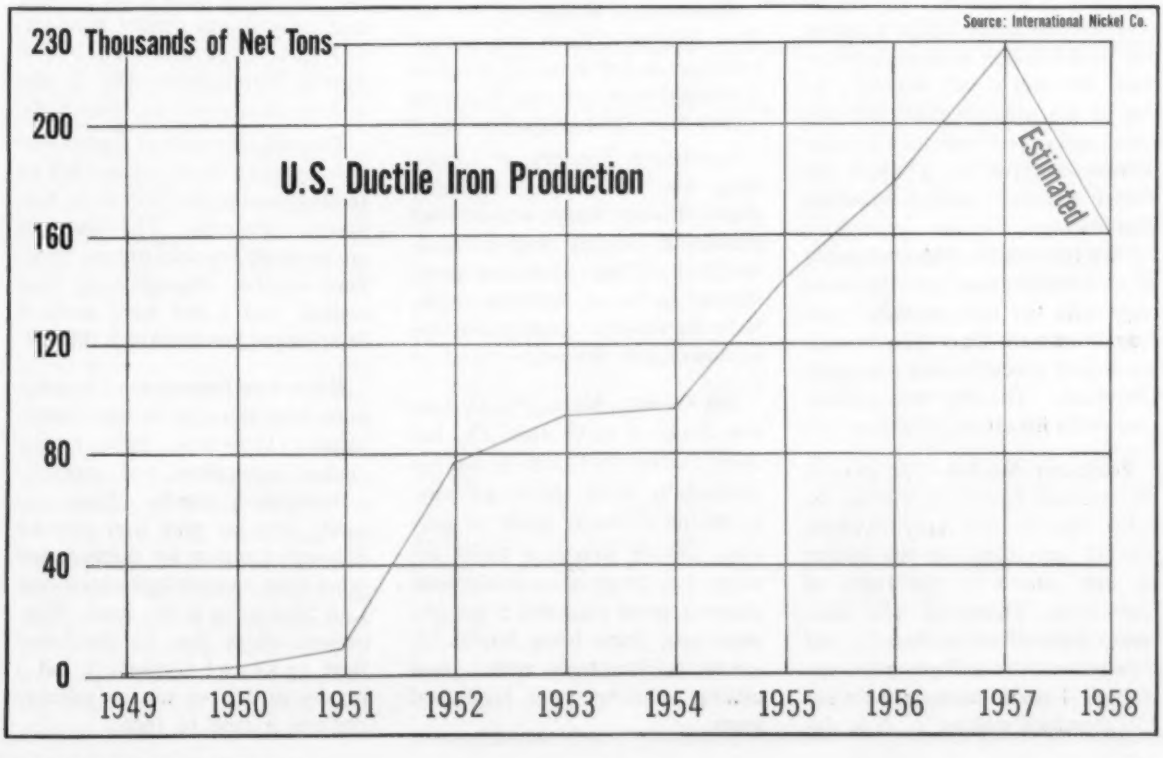
Some other foundries found poorly-made ductile iron castings shattered if dropped on the floor.

Quality Control Needed — But the bugs eventually were ironed out. Foundrymen have learned the hard way to have a healthy respect for the tight quality control and equipment specifications.

Price generally comes out about 25 to 40 pct higher than cast iron on a part-for-part basis. Yet proper casting design to take advantage of its properties can shave the differential.

Ductile Bucks Trend—At Hamilton Foundry & Machine Co., Hamilton, O., shipments of ductile iron

How Ductile Iron Has Come of Age



What Is Ductile Iron?

In May, 1948, The International Nickel Co. announced discovery of a new foundry material at its Bayonne Research Labs. They called it ductile iron.

Its Properties—It has good fluidity and is easy to cast. It machines well. But it also has good ductility, and can be bent or twisted as cast. Inco says it is the long sought "bridge" between cast iron and steel.

Ductile iron also has good elevated temperature strength, excellent resistance to oxidation, and atmospheric corrosion resistance better than that of carbon steel.

Its Outlook — In the 10 years since its development ductile iron has been well received for a wide variety of uses. Currently there are six ductile irons available in various combinations of strength, ductility and toughness.

The future: Inco says ductile iron is likely to become the third-ranking industrial material on a tonnage basis.

this year have gone up in the face of a general decline in other shipments.

"In the first 10 months of this year our ductile tonnage increased 13 pct over the same period last year, while our other metals went off 38 pct," says Peter R. Rentschler, vice president.

It's Working Out — "While still a minor part of the overall figures, the trend is significant. We ran 80 experimental heats before shipping any, and it is now working out very well. We feel it will definitely be one of the more popular specialty irons, and we are launching a major promotion drive on it which includes a rather unique Ni-Resist ductile iron."

"We feel ductile shipments could go to 1 million tons per year overnight with the right market," says Don Workman, Gray Iron Founders Society executive vice president, Cleveland. "The true tonnage next year could hit about 500,000.

Producers Are Up—"At present the available figures are not too reliable, since we feel many foundries are not separating out the ductile in their reports to the Dept. of Commerce. There are 170 companies licensed to produce it, and if you count the multiple plant operations, I would estimate there are 250 foundries making it. It is significant that about a quarter of the prizewinners in our annual design contest were for ductile iron.

"The valve industry has indicated it would accept approximately 250,000 tons of ductile iron valve bodies a year. Another large company, recently producing 8,000 tons of ductile, plans to increase output in 1959 to 12,000 tons, and will reach 30,000 tons as soon as possible.

Applications Rising — "We believe now that there are enough foundries skilled in the art to attain a production of well over 1 million tons if demand continues to rise."

Lynchburg Foundry at Lynchburg, Va., is shipping planetary gears, driving flange wheels, and sheaves for huge earthmovers made in Ohio. Other parts are being shipped as far as Salt Lake City. It is increasingly coming into the picture on new designs.

Big Castings Made—W. O. Larson Foundry in Grafton, O., has made castings to 10,000 lb and has successfully made almost all parts in ductile currently made in gray iron. Ductile iron now varies between 5 to 20 pct of total shipments where it never exceeded 5 pct two years ago. Parts being turned out are for machine tools, rubber plant mixing machines, and high load gears.

Vulcan Foundry Co. of Oakland, Calif., ships ductile castings all the way to Baltimore, furnishing a polished sample of each heat.

Eye Pipe Market — Mesta Machine Co. of Pittsburgh and other heavy machinery manufacturers such as Cooper - Bessemer of Mt. Vernon, O., and Nordberg Mfg. of Milwaukee, can make ductile in up to 300,000 lb castings.

Another lush market being eyed by ductile producers is in pressure pipe for gas mains, largely made now with steel. Production of gray iron pipe for this ranges between 1.3 million and 1.7 million tons. Lynchburg Foundry is currently conducting soil corrosion tests on ductile for this application and has been in research on it for several years.

More Experience Needed — "There are several miles of ductile pipe laid now for pilot use," says W. Ray Odor, pipe sales manager. Price of ductile will run about 10 to 20 pct over gray iron, but with production experience we should be able to narrow the margin. We feel it has great potential. But like other new items, we need some production to work out quality standards and cost." American Cast Iron & Pipe in Birmingham, Ala., is also making ductile pipe experimentally.

Original clearance of ductile iron patents were announced in 1949 by International Nickel Co., which now licenses producers. The foundries are generally required to have basic-lined cupolas, although some have neutral, and a few have made it in acid type, but control is difficult.

Know-how Important—Licensees must generally step up their metallurgical know-how, have precise analysis equipment, and generally a basic-lined cupola. These are rarely used in gray iron practice although common for stainless and other close analysis type operations. Low phos scrap is also used. Magnesium alloys can be purchased from several distributors, but a royalty of $6 per ton on saleable castings is paid to Inco.

Merger Decision Far-Reaching

Bethlehem-Youngstown Ruling Considered Restrictive

Judge's decision barring steel merger has sweeping implications, lawyers say.

Court's interpretation of Clayton Act's Section 7 covers broad area in corporate merger law.

■ Judge Edward Weinfeld's decision blocking the proposed merger of Bethlehem Steel Co. and Youngstown Sheet & Tube Co. is expected to have far-reaching consequences in the field of corporate merger.

In his opinion against the merger, the U. S. District Court judge interpreted Section 7 of the Clayton Act to mean that a proposed corporate merger need not involve a large share of a market to make it illegal.

An Interpretation — A leading corporate attorney had these thoughts on the opinion:

1) It strengthens the idea that the mere probability of reduced competition is enough to block merger.

2) It says a merger may be prohibited on the ground that it may promote other mergers.

3) It weakens the argument that a merger should be permitted because it will strengthen competition against a larger company in the same industry. This argument has been widely used.

Scope Unexpected—"This is going to make it awfully tough to put through any large merger," says one legal analyst. "Judge Weinfeld has given the Federal Trade Commission and the Anti-Trust Div. strong ammunition for future cases."

Legal men were taken back by the sweeping character of the opinion. According to one lawyer, Judge Weinfeld could have confined himself to the particular case. He ruled the merger would result in a lessening of competition. He could have stopped there.

Opinion Restrictive—Instead, his opinion reached out into the area of tendencies and probabilities. In doing so, he gave a very restrictive interpretation to the Anti-Trust Act of 1950 (Section 7 of the Clayton Act).

The original Clayton Act of 1914 was aimed at nipping incipient monopoly situations in the bud. The 1950 amendment bolstered this objective in two ways:

Closes Loophole—First, it closed a loophole whereby mergers involving the acquisition of assets, rather than stock, were not covered.

Secondly, it enlarged the scope of the prohibition to include a reduction in competition in any line of commerce or in any section. The original act referred only to head-on competition between two companies.

Background — There has been considerable litigation since the 1950 Act, but until recently cases were either settled before a court decision or were still pending. About a month ago a private suit, involving two sugar companies, drew a ruling against merger.

The Bethlehem case was the first government action under the new law to reach a court decision. Prior to the ruling, there was considerable disagreement as to the meaning of its terms. Judge Weinfeld has legally resolved most of the doubts.

Basis For Appeal — The companies may appeal the ruling directly to the Supreme Court. An appeal would have to be based largely on interpretation and application. Both parties—the companies and the Government—have agreed to about 80 pct of the facts in the case.

Background on Antitrust

1890

Congress passed the Sherman Antitrust Law. This law prohibited contracts, understandings, or other acts in restraint of commerce, and prohibited attempts to monopolize, or actual monopoly. The law was so broad it could be taken to forbid practically any contract.

1910

The Standard Oil decision limited prohibition to unreasonable restraint.

1914

Congress passed the Clayton Act aimed at nipping mergers that might lead to monopoly situations. A Supreme Court decision limited prohibition to mergers involving the acquisition of stock, but not assets. This limitation made the Act ineffective.

1950

Clayton Act amended by the Anti-Merger Act (Celler Act). This Act extended the prohibition to asset acquisitions, and extended the prohibition to reduction of competition in any line of commerce in any section of the country. Previously, there had to be head-on competition between the two companies whose merger was proposed.

Watch Those Labor Precedents

Past Practice Can Hamstring Your Right to Manage

How you handled a problem in the past may have a bearing on an important future labor dispute.

Past practice has been held binding in a broad area of labor relations.—By G. J. McManus.

■ Is management hamstringing its own right to manage?

There are signs that past practice is becoming an increasingly important yardstick for detailed management at the plant level. In questions of discipline, management is very much restricted by its past behavior.

The steel industry has long given official recognition to the force of the past. Most steel contracts today make some provision for preservation of local working conditions or practices. These take in day-to-day plant activities, not specifically covered in basic labor agreements.

What's Involved—The wide scope of these activities was spelled out recently by Thomas Ricca of Jones & Laughlin Steel Corp. Speaking at a Pittsburgh meeting of the Society for Advancement of Management, Mr. Ricca gave this listing:

"Past practice has been held binding in . . . the method of assigning overtime, the choice of turns, relief periods, washup time, the size of crews and many others, all of which are direct limitations in the flexibility of operating the business."

Are You Affected?—Specific past practice agreements are less common outside steel. But Mr. Ricca points out that even without specific provision, arbitrators sometimes find such practices implicitly written into the agreement.

The question of discipline is similar. A company must live with its past record. Recently a steel mill suspended a man for taking the day off before a holiday. An arbitrator ruled against the suspension on the grounds that it was common practice at the plant to take off early.

Elusive Standards—Standards for the establishment of binding practice are hazy. In one recent case a union challenged the right of a company to assign overtime in the rebuilding of a blast furnace. The union argument was based on practice followed at the last rebuilding, 20 years ago. The arbitrator ruled that practice was not established by an operation that took place once every 20 years.

Apart from extreme limits like this, there are few guides as to the frequency or duration required for a binding practice.

Rulings on Discipline—In discipline cases, particularly those involving discharges, there is often a very exact procedure for a company to follow. Before the company can discipline a man, it must first follow a set pattern of warnings. One man with a record of 36 absences over a year's time was sustained when he challenged a discharge. The arbitrator ruled the company had not given sufficient warning.

Role of Foremen—How do you guard against wasteful practices and protect disciplinary rights? A basic step, says Mr. Ricca, is the education of first line supervisors.

"Foremen should be made to realize that any method of assignment, any procedure of scheduling, any concession no matter how insignificant, can ripen into a limiting past practice . . . if continued to a considerable period of time."

UAW Accepts Pension Freeze

■ Automakers have revealed a little known agreement made as part of their bargaining with the United Auto Workers for new contracts.

Four automakers have promises from the UAW that never again will it seek additional pension benefits for some 40,000 auto workers already retired. Malcolm L. Denise, manager of Labor Relations for Ford Motor Co., said the UAW had signed a letter pledging "for all time" to refrain from trying to increase pension benefits for workers already on retired lists.

It's For Keeps—General Motors, Chrysler and American Motors confirmed that the UAW had made similar agreements with them. As the agreement was made outside of the contract, it doesn't expire and can't be cancelled.

Mr. Denise revealed the little known concession in a speech at a labor relations conference in Detroit. However, he pointed out the pension benefits "freeze" doesn't restrict bargaining for improvements for future retirees. But any improvements negotiated when present contracts expire in 1961 will only apply to workers retiring after the date of the contract.

Last Improvement—Mr. Denise said Ford had reached an "understanding" with the UAW at the end of its 1955 negotiations that it would be the last contract providing more money for previous retirees. Pension improvements negotiated this year provide an increase, from $2.25 to $2.35 a month for each year of service, for workers already drawing pensions.

What Steelworkers Lost Because of Imports

Steel imports are pinching the paycheck of American steelworkers. The increasing flood of foreign-made barbed wire, wire fence, nails, and staples cost U. S. millmen over $14 million in lost wages last year.

Man-hours lost by U. S. workers equalled full-time employment for almost 2400 employees.

	Imports (tons)	Man-Hours Lost	Wages Lost
Barbed Wire Fencing	**63,109**	**1,413,642**	**$4,354,017**
Woven-Wire Fence, Fencing Wire	**30,135**	**590,646**	**1,754,219**
Wire Nails and Staples	**134,829**	**2,790,960**	**8,121,694**
Totals	**228,073**	**4,795,248**	**$14,229,930**

Imports Threaten More Products

Foreign steelmakers are widening the variety of products they sell in the U. S.

Japanese mills have landed an order from the U. S. Navy for ship plate.

American wire producers want action by the Tariff Commission to hold down imports.

▪ Steel imports are not only increasing, but spreading to a wider range of products.

Competition from foreign-made wire products has been a growing threat to U.S. mills for years. Four domestic producers are now appealing to the Tariff Commission for help in combating it.

Japanse Active—But wire mills are not the only ones facing overseas competition. Consider this:

Domestic plate producers recently lost a U.S. Navy order for ship plate to a Japanese mill.

Tonnages of Japanese light plate have been offered to East Coast buyers.

Pig iron imports are flooding into the U.S. from Germany, the Low Countries, and Spain.

British mills are inquiring about shipping cold-rolled strip into the U.S.

Japanese steel importers are reported offering stainless sheet in Eastern markets.

Aluminum Imports — Metals other than steel are also feeling the pinch. Imports of aluminum sheet, bar, and rods totaled 1250 tons through August, 1958 as against only 750 tons last year. Japanese aluminum mill products were priced 5¢-8¢ lower than U.S. products along the East Coast earlier this year.

The increase in heavy plate imports shows how foreign steel competition is enlarging. Heavy plate shipments from abroad during the first eight months of '58 totaled about as much as that shipped all during 1957.

Price Gap — Japanese plate is priced about $20-$30 a ton under the f.o.b. mill price of domestic plate makers. A large share of it is sold in Gulf Coast and Pacific Coast markets. But the Itoh Corp. of New York supplies it in the eastern U.S.

American plate mills are bitter about this competition. Some are writing Congress for action to help domestic producers. They agree that U.S. support of foreign industry, as a State Dept. policy, is a sound idea. But they feel purchase of U.S. ship plate from overseas sources is carrying things too far.

What's Blamed—The American wire producers appealing for government aid, blame widescale imports on two causes: Low foreign wage rates and inadequate U.S. tariffs. The four — Atlantic Steel Co., Continental Steel Corp., Keystone Steel & Wire Co., and Northwestern Steel & Wire Co.—still believe reciprocal trade policies are sound.

They are content to compete with imports but ask the Tariff Commission to "prevent serious injury to domestic producers." Their suggestions: (1) amend trade laws to narrow the price advantage of imports to a more reasonable figure: or (2) impose import quotas on foreign wire products.

Imports on barbed wire, nails, fence, and fencing rose from 100 tons to 2280 tons in the last ten years, the applicants point out.

Growth Market in Containers

Transportation Industry Rushes for New Orders

Steamship companies, railroads, and truckers, have rediscovered containerization.

Giant van-size containers offer many economies to shippers.—By R. O. Schulin.

▪ A new growth market in metalworking is mushrooming out of the depths of the recession.

A suddent burst of interest by the transportation industry in "containerization" is adding momentum to demand for giant-sized metal containers. Steamship companies are the major buyers at the moment, but interest is carrying over into the railroads and trucking lines.

Trailer Builders' Bonanza — A minimum of 4000 van-size containers up to 34 ft long are currently on order in the U. S. Their average value is about $4000. Several more large orders are at the point of being placed.

About half of the containers currently on order, are with truck body builders. The Truck Trailer Manufacturers Assn. estimates that between 5 and 10 pct of the industry's 1958 volume will consist of containers in the form of demountable truck bodies. The industry's total production for 1958 will be in the neighborhood of $300 million. Next year may see containers getting an even larger share of the trailer builders' production.

FAST SHIPLOADING: Giant gantry crane lifts a van container aboard a Pan-Atlantic Steamship Corp. "trailership." Containerized cargoes can cut loading time from three days to 8 or 9 hours.

Labor Costs Figure—Meanwhile, other type metal fabricators are getting a share of the orders. They include material handling equipment builders, shipbuilding companies, and others.

Interest by the steamship companies in containers has been spurred by rising stevedoring costs. Any pre-packaging setup, shipping men claim, cuts longshoremen's costs. They are predicting a greatly increased container service across the Atlantic within the next five years.

Foreign Competition—European shipping companies are well along in containerized service and, according to John R. Immer of Work Saving International, a consulting firm, "U. S. shipping firms had better get into the act."

But at least half a dozen U. S. steamship lines are already in the act. One of the leaders is Pan-Atlantic Steamship Corp., Newark, N. J. This company discontinued its conventional freighter service between North Atlantic and Gulf ports in 1956 and converted its six ships to "trailerships."

Definite Advantages—Each ship can carry 226 containers stowed in hatches and on decks. The highway equipment used in conjunction with these six trailerships includes some 7300 pieces of equipment, all specially designed for the purpose.

Pan Atlantic's experience showed that overall stevedoring costs were reduced by containerizing, service was speeded up, and freight damage reduced to a minimum.

Further advantages are the elimination of multiple handling, lack of need for ship-side warehousing, and the ability to accumulate a shipload of freight in a day rather than in weeks required before. Shiploading time has been

cut to 8 to 10 hours. Conventional shiploading methods take an average of two or three days.

Pilferage, Damage Reduced — Pilferage, long a plague in the steamship industry, has been completely eliminated through use of these sealed containers. Pan-Atlantic says that damage claims do not exceed 1⅝¢ per ton on high class merchandise handled. Damage claims on much lower-rated commodities handled with conventional break-bulk methods are frequently 20 times that amount.

According to Keith W. Tantlinger, vice president, engineering, The Fruehauf Trailer Co., and formerly vice president of Pan-Atlantic, "the move toward containerization in water freight is an absolute must."

Other steamship companies are having similar experience with containers. Several new requests for subsidies have reportedly been placed with the U. S. Maritime Commission for construction of container ships. It has put the Maritime commission into the container business in a big way. Officials are trying to standardize container sizes before putting in orders for the ships.

Railroads Active—But while the water carriers are developing their container services, so are the railroads. The New York Central, for instance, already has in operation its elaborate "Flexi-Van" service. Demountable truck van bodies are transferred quickly to special cars equipped with turntables.

For the truckers, the container is expected to move first into long-haul trucking. This is an area in which the aluminum trailer has enjoyed its greatest strength.

Long-Term Pattern—In medium length hauls, the combination aluminum-steel trailer looks like the best bet. In short distance hauls, carbon steel trailers are already common and have a price advantage.

All these developments indicate a long range growth pattern is in the making.

Bearing Orders Up

Lead Times Are Lengthening

▪ Bearings aren't booming—yet. But bearings makers say their order books are starting to get heavier and lead times are starting to lengthen.

This is a familiar song for the bearing manufacturers. They sang it several times before in 1958. But this time they are sure it's the real thing. "After one or two false starts earlier this year, a real upward trend is now apparent," says Robert L. Miller, sales vice president, Norma-Hoffman Bearings Corp. "And this one has some legs under it."

Bigger Demand — Spearheading the increased demand are appliances and automotive. Makers of agricultural equipment and electric motors are also chiming in. And orders from makers of portable and light stationary tools has picked up. Only major category resisting the trend is machine tools.

Some business is already being booked for the first quarter 1959. Generally, the industry believes this is a good indication that the sales curve will continue to move up next year.

Demand for specialized bearings is also moving up. Miniature Precision Bearings, Inc., reports October was the best month in the company's history. They trace their upward move back to June 1958.

Price Picture — Prices appear stable, but vulnerable. Many bearings manufacturers have labor contracts with escalator clauses, warn they can't absorb cost-of-living hikes much longer. Also, they say any increases in raw materials costs, like alloy steels, will be passed along.

Producers see no shortage of bearings in sight. They say raw material stocks appear to be more than adequate. And almost all believe their current capacity is adequate.

Action on Bearing Standards

The export picture looks brighter for U. S. bearings makers, at least from the standards viewpoint.

Jerrus M. Bryant, chief engineer, Ball and Roller Bearing Div., Link-Belt Co., reports direction being taken by bearing group of International Standards Organization favors the U. S. industry.

A key move is the recommendation of parallel standards for the inch and the meter. The group, spearheaded by the U. S. delegation has gone one aggressive step further and recommended an effort be made to merge these standards into one "in the distant future."

Also, at a recent meeting, a working sub-group of the ISO bearings committee, headed by Mr. Bryant, worked out a code for identifying ISO standardized bearings that is in substantial agreement with the code of the Anti-Friction Bearing Mfg. Assn. in the U. S.

Mr. Bryant says excellent progress has been made on a national level, but warns there is still work to be done. "The first nation on hand with sound national agreement can wield a tremendous influence in the ultimate international standard," he says.

A New Approach to Retirement

More Economic, Less Mental Adjustment Is Needed

Industry may be barking up the wrong tree with its retirement policies.

Survey shows most workers take the retirement step in stride, psychologically.

▪ "Do you wish you were back at your old job?"

A retired man who answers "Yes" to that question probably has a retirement income under $5000 and needs the money, reports Harry J. Johnson, M. D., president of Life Extension Foundation. Financial worries, he says, are the largest contributing factor to discontent among retirees.

Income Too Low—In a survey of 1500 retired persons, the Foundation learned that 35 pct had a gross retirement income under $2000, 42 pct had incomes from $2000 to $5000, and only 15 pct had incomes above $5000. Eighty-four pct of those who wished they were back at work were in the $5000-and-under category.

"Obviously, it would help if companies would increase pension benefits," says Dr. Johnson, "yet many are doing all they can prudently do now." As an alternative, he suggests two practical steps industry can take to more fully recognize the financial dilemma of its average retiree:

Help in Planning — 1. More effort can be made by the company to supply the employee with guidance and incentive to plan earlier for the financial aspects of his retirement. The fact that less than one-half of the retirees surveyed derived retirement income from dividends, interest, rentals or royalties supports this point.

2. Retain retired personnel wherever possible on a part-time basis as vacation replacements, training instructors, retirement counsellors, and other such jobs.

"Industry can benefit from the experience of these men and, at the same time, help them achieve a greater degree of financial independency," advises Dr. Johnson. That the men would welcome the opportunity is indicated by the fact that 20 pct of the 1500 retirees said they had to take other jobs in order to "make ends meet."

The Wrong Road—Dr. Johnson claims that industry is creating problems of retirement which do not really exist.

Many companies today seem to be most concerned about the employee's psychological adjustment to retirement, he explains. Elaborate programs for group and individual pre-retirement counselling of the 60 to 65-year-olds have been instituted in order to smooth out the transition from active to "inactive" days.

"Actually, the only shock most retired people seem to experience is an economic one—how to learn to live on a reduced income," Dr. Johnson contends.

No Advantage — Probably the most significant finding in the Foundation survey is the fact that, of those who received pre-retirement help from their companies in the form of articles or books or individual and group counselling, 88.7 pct are contented with their retirement.

Yet among the larger segment of the 1500 (53 pct) who received no such preparatory assistance, 88.6 pct are happy with retirement. From the standpoint of psychological preparation, this would suggest that if retirement were simply left to chance, the odds are practically 9-to-1 that retired life

Few Idle Moments After 65

Interests Sprout Quickly—Before retiring, less than half of 1500 persons surveyed by Life Extension Foundation had any particular interest or hobby. Their jobs consumed most of their time.

Yet 79 pct of this group now are actively engaged in such pursuits as travel, hunting, fishing, gardening, crafts, reading, church activity and so on. And this figure does not include those who report that they have finally found time to enjoy their grandchildren or visit with friends.

Comes From Within—It casts a different light on the popular belief that it is important for a man nearing retirement age to cultivate retirement hobbies to take up the slack time ahead.

"Hobbies," says Dr. H. J. Johnson, president of the Foundation, "are not cultivated. They are spontaneous. They stem from motivations within the individual, not from outer suggestion or force."

Loafing Unpopular—During active business life, many men just do not have time to express these interests. Consequently they lie dormant. When time is provided, they blossom forth.

The survey results showed that 89 pct of retired men find their life is interesting. Specific interests or hobbies were reported by 79 pct. And 67 pct say they do not have "time on their hands."

would be happy.

Better Than Expected — Dr. Johnson adds that the 6 pct who have their health and have an adequate income yet who are still unhappy in retirement is probably the same small percentage of people in any group who always find adjustments difficult and who never seem to be completely satisfied.

"Industry can draw an invaluable lesson from the fact that only 47 pct of these 1500 retired men looked forward to their retirement with pleasure and optimism, yet, after their testimonial dinners, almost twice as many found this new phase of life a happy development," says Dr. Johnson.

"They do not find the 'poor Georges' people told them about. Precious few of them 'graze' as the skeptics predicted. And the contributions these retired people are making to society belie the label 'obsolete' they so frequently inherit."

Myth or Fact — Dr. Johnson would dispel some popular misconceptions about retirement. The story of "poor old George," who died six months after retirement because of boredom is one of them.

"Nobody has ever died six months after retirement because of retirement," he says. "Of the 1500 men surveyed, 39 pct have been retired 5 years or more; 55 pct have been retired from 1 to 5 years, and only 6 pct have been retired less than a year.

Longer Life Span—The man of 65 today can reasonably expect to live on for 14 years. Since 89 pct of the retirees surveyed report busy, interesting lives, it would appear that many will realize those 14 years — even more. Certainly, boredom is not going to kill them, Dr. Johnson adds.

The survey shows that 27 pct of the retired men said they feel better since retiring; 56 pct say there's been no change in their health, and only 17 pct reported feeling not quite as well.

Large-scale Iron Powder Users

	Sales (in millions of lb) 1957	1958*
Bearings and Parts	23.8	21.7
Welding Electrodes, Flame Cutting Equipment	22.3	19.7
Electronics and Magnetic Applications	1.9	2.9
Friction Materials	0.435	0.296
Miscellaneous Uses	2.3	2

*IRON AGE Estimates

Iron Powder Sales—

Last Quarter Upturn Will Help

▪ After a disappointing nine months, sales of iron and iron-based powders are trending up again in the fourth quarter.

Domestic shipments started the year with 3.5 million lb in January, fell to a low of 2.5 million in April, and rebounded to 5.2 million lb in October. November and December shipments should be at least 10 pct above October, The IRON AGE estimates.

Total shipments for the year should be about 46.6 million lb, not too far below the 1957 level of 50.8 million.

Monthly Average Up—It's worth noting that the monthly average of fourth quarter '58 shipments will be almost 5.6 million lb, significantly above the monthly average of 4.2 million for the year 1957. Fourth quarter '57 average was about 4.5 million lb.

Bearings and structural parts continue to account for the largest share of iron and iron-base powder sales, should hit 21.7 million lb this year. This market accounted for almost 23.8 million lb last year, and continued growth seems assured.

Second largest group using iron powders remains welding electrodes and flame cutting and scarfing equipment. Sales to this market will be about 19.7 million lb this year against almost 22.3 million in 1957. The market will continue to pace metalworking expansion, but, unlike bearings and structural parts, chances for major new breakthroughs appear limited.

Sales Gains—Only sales classification to show an increase this year over last is electronics and magnetic applications. In this group, shipments will rise to an estimated 2.9 million lb in 1958, against about 1.9 million for 1957. This market growth reflects electronics industry activity.

Friction materials use of powders will total about 296,000 lb this year, against last year's figure of 435,000 lb. Miscellaneous applications, including pharmaceutical, will reach slightly over 2 million lb in 1958, compared to a little better than 2.3 million last year.

Man-Made, Sea-Going Island

LONG VOYAGE: The "portable island" being pushed down the Mississippi belongs to Italy. It was built for them by R. G. LeTourneau, Inc., Longview, Tex., at a cost of $1 million. The platform will be towed about 10,000 miles and set down in the Persian Gulf for off-shore oil drilling. Electrically-operated, self-elevating legs adjust to various depths, make it practical to easily change drilling sites.

More Construction Contracts in October

Construction contracts signed in October 1958 topped any October on record, reports F. W. Dodge Corp.

Led by sharp increases in housing and heavy engineering the total topped the $3 billion mark, first time for an October, and was 27 pct higher than the same month 1957. Total contracts were $3,309,024,000.

High Period—This was the sixth consecutive month to set a new monthly high. The six months together were by far the highest such period in history says Dodge.

The $1,595,041,000 in housing contracts signed in October was $430 million or 37 pct above October 1957. This was the biggest category increase, in dollars, over the 1957 period, and is credited primarily to an increase in single family homes building.

The biggest boost, percentagewise, was in heavy engineering. October total was $759,190,000, up 41 pct from last year. Highways and electric power contracts produced most of the increase.

Ups & Downs — October contracts for non-residential builders were up 5 pct over October 1957, to $954,793,000, due primarily to commercial buildings, churches and recreational buildings. These categories offset some declines in this group. Down sharply, for example, were manufacturers buildings.

Totals for the first 10 months this year show residential building up 10 pct, heavy engineering up 23 pct, and non-residential building off 3 pct. The $30,279,846,000 overall total is up 9 pct.

Expect No New Write-Off Laws

Plans for liberalized federal depreciation allowances on plants and equipment may be sidetracked by Congress in 1959.

This year Congress legislated a special tax write-off on productive items of limited value. Many thought Congress was moving toward encouraging industry to spend more for modern, efficient equipment.

Change Course—But now opinion among trade groups in Washington is that the coming session of Congress will do little to provide this incentive. Opposition to a tax break for industry not accompanied by a break for the individual may rule out freer rules on depreciation.

Some members of Congress insist industry has not exhausted the depreciation allowances under the present tax code. Some industry spokesmen admit this, but say, however, that the test of a tax incentives law is whether the enterprising concerns take advantage of it.

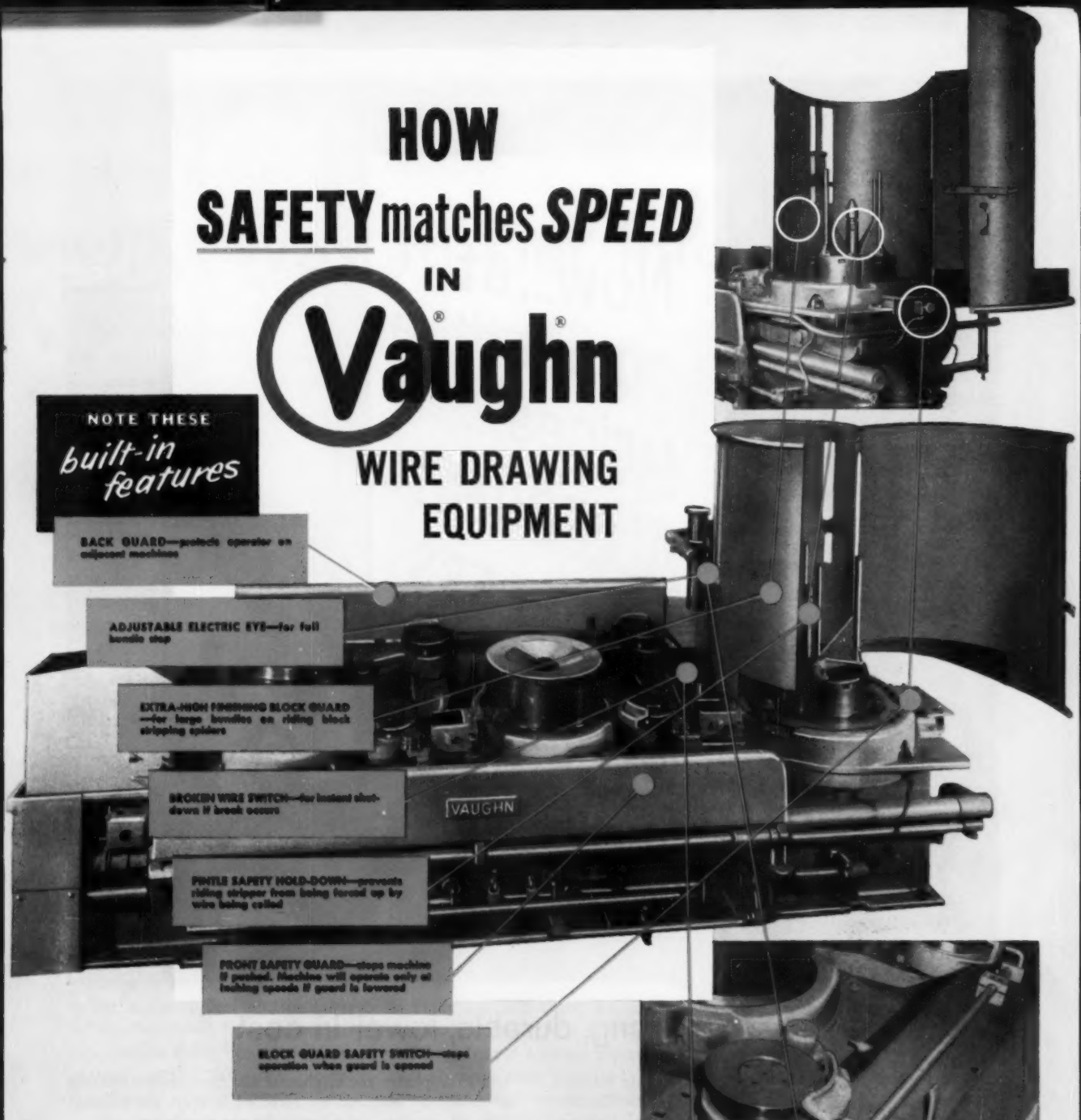
Congress—especially the House Ways and Means Committee— will be asked to make the tax rules more realistic. However, Congress will also be confronted by the probability of a federal deficit of some $12 billion.

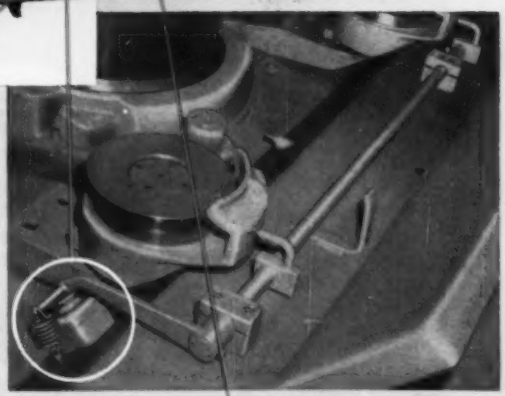
Source on EURATOM

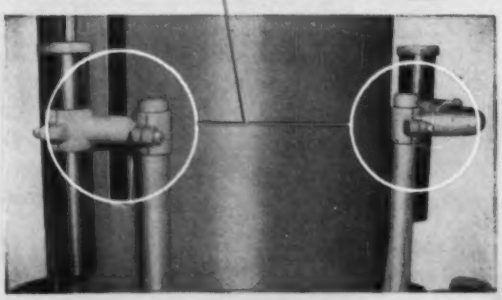
Information on plans and projects of the European Atomic Energy Community (EURATOM) is now available at the Community's U. S. offices, Southern Building, Washington 5, D. C.

Leonard B. Tennyson is the U. S. information executive for the Community. Mr. Tennyson is also an official spokesman for The European Community (common market).

HOW SAFETY matches SPEED IN Vaughn WIRE DRAWING EQUIPMENT


NOTE THESE
built-in features
BACK GUARD—protects operator on adjacent machines
ADJUSTABLE ELECTRIC EYE—for full bundle stop
EXTRA-HIGH FINISHING BLOCK GUARD—for large bundles on riding block stripping spiders
BROKEN WIRE SWITCH—for instant shut-down if break occurs
PINTLE SAFETY HOLD-DOWN—prevents riding stripper from being forced up by wire being coiled
FRONT SAFETY GUARD—stops machine if pushed. Machine will operate only at inching speeds if guard is lowered
BLOCK GUARD SAFETY SWITCH—stops operation when guard is opened
VAUGHN





SAFETY for men and equipment is engineered thoroughly into Vaughn Wire Drawing Machinery—in every type, in every model. The high operating speeds of modern Vaughn machines are *safe* speeds because of this engineering. Our Motoblox, Motoblocs, Ringblox and other equipment are designed to match *productivity with protection* over the widest range. Let us detail our many safety developments, at your convenience.

"Quick on the Draw!"

The VAUGHN MACHINERY COMPANY
CUYAHOGA FALLS, OHIO

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

Strong, durable, lower in cost

You can now specify windows of sturdy, lasting stainless steel—at a cost much lower than you may think. Reason? Manufacturers now *roll-form* windows from Allegheny Stainless and pass the fabrication economies on to you.

In actual bidding recently, the price of roll-formed Allegheny Stainless windows averaged only about 10% higher than another non-stainless metal.

Vital to architecture, durability and compatibility are inherent in Allegheny Stainless. It never requires chemical films for surface protection, and virtually cleans itself with normal rainfall. Because of an amazing resistance to corrosive atmospheres, the brightness and freedom-from-pitting of Allegheny Stainless are recorded history; yet different patterns, textures and colors make news each day.

Stainless steel windows—of all-welded design and tubular construction—are available in Allegheny Stainless Types 202 and 302.

Include Allegheny Stainless in your design-thinking now. Learn how you can get the quality of stainless steel windows for much less than you think. For additional facts, and manufacturers' names, write to ***Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Dept. A-12.***

WBW 7295

ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

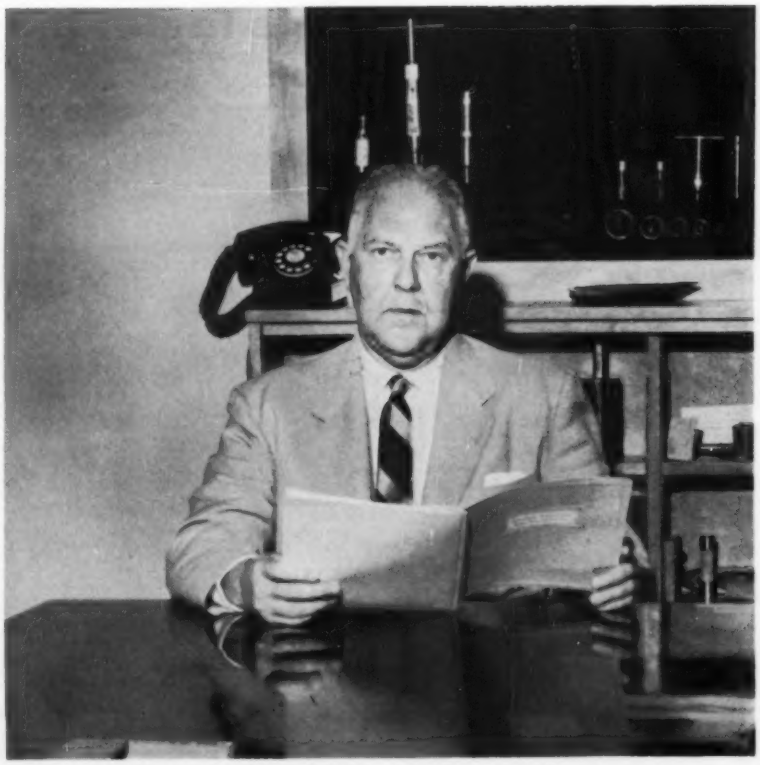
EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

Eduard Baruch

One Way to Get Into Business

Mr. Baruch can take credit for developing a new concept in prolonging screw thread life.

He did it without benefit of technical training.



EDUARD BARUCH: Imagination, ingenuity, and initiative pay off.

▪ Eduard Baruch is a former management consultant who took advantage of a chance to practice what he preached. He took a fling at manufacturing and has become president of Heli-Coil Corp., Danbury, Conn., an up-and-coming producer of fastener specialties.

It all started back in 1949 when Mr. Baruch was hired as a consultant by a group interested in acquiring Aircraft Screw Products Co., Heli-Coil's predecessor. His first day on the job he found a small business operating in a garage in Long Island City. Its sole product was a spring-like device designed to eliminate stripped threads in aircraft cylinder heads.

Sees Its Potential—Although Mr. Baruch was trained as a lawyer and got most of his business experience in the financial field and in sales, he was fascinated by the technical simplicity of the device. It was one of those cases of "Why hadn't someone thought of this before?"

After many sleepless nights, he came up with a plan for redesigning the original concept and producing, instead, a complete line of standard screw thread inserts. These inserts, he reasoned, if adaptable to conventional screw threads, could be used to line tapped holes in soft materials such as aluminum or plastics.

Product Catches On—He and a small group of enthusiasts bought out the company, changed the name to Heli-Coil, and began perfecting the idea. Then he put some samples in a bag, bought a round-trip ticket to California with stopover privileges, and called on manufacturers across the country.

The product caught on and Mr. Baruch was in business to stay. In 1951, Heli-Coil built its first plant in Danbury. Its volume has grown from about $250,000 in 1951 to $3 million in 1957.

Stock in Demand — Two years ago, Heli-Coil was acquired by Topp Industries, Inc., and operated as a subsidiary of that firm. A few weeks ago, Mr. Baruch executed an unusual transaction in the business world. Heli-Coil bought itself back from Topp Industries.

An offering of $1,300,000 in convertible debentures and 180,000 shares of common stock were snapped up on the stock market before the ink was dry on the agreement of sale.

His Background—Born in Brooklyn, N. Y., 50 years ago, Mr. Baruch attended Rhenania College in Switzerland and Columbia Law School, Class of 1933. During the next 20 years he picked up valuable experience with Irving Trust Co., Bankers Life Insurance Co. of Des Moines, and with the firm of James H. Rhodes Co., Chicago.

NOW IN OPERATION !

New warehouse to make your Timken® graphitic tool steel and 52100 tubing shipments faster than ever

NOW you can get shipments with more speed than ever before because our new warehouse for Timken® graphitic tool steels and 52100 tubing has speed built in. Here's how the new warehouse helps you:

WITHIN 24 HOURS of the time we get your order, we can have the material on its way to you with the help of ultra-modern handling equipment and methods.

FEWER DELAYS EN ROUTE. We built our new warehouse on main railroad and truck routes in Canton, Ohio, for faster shipping.

ALWAYS A FULL STOCK. Moving steel to the warehouse now takes only minutes because mill and warehouse are side-by-side. This makes it easier to maintain full warehouse stocks.

WIDE SELECTION OF STEELS. From the new warehouse, you can choose from over a hundred sizes of *52100* tubing and fifty sizes of 4620 tubing. Graph-Mo®, Graph-Air®, Graph-Tung®, and Graph-Al are available in more than one thousand sizes. You can get Graph-Mo in hot rolled bars, rounds, squares, precision ground flats, billets or hollow-bar.

Now, more than ever, when you want these steels fast, phone or write your order to The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO". Tapered Roller Bearings, Alloy Steels and Seamless Steel Tubing, Removable Rock Bits.

TIMKEN *Fine Alloy* STEEL

TRADE-MARK REG. U. S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

Recovery Faster than '49, '54

Started off by the defense spending spurt, the recovery is now moving ahead on a strong demand for civilian goods.

Rate of new orders and sales indicates improvement will continue. Durable goods backlogs start fattening.

▪ New business continues to come in for manufacturing firms, and at a rate that should mean continued improvement in the months ahead.

This is reflected in general increases in new orders, sales and shipments of manufactured products. Significantly, the gain is greatest in the durable goods industries.

Half Way Back — Overall, the pickup in sales has recouped about half of the decline in sales rate that occurred between the high points of 1957 and the low this year.

A current Office of Business Economics study points out that new business placed with durable goods industries has picked up about 18 pct since the low point. This is faster than the rate of recovery in either 1949 or 1954.

Defense Led Off — The early stages of the upturn were supported by the sudden increase in defense spending as the post-Sputnik panic touched off a big spree in Congress and in the Pentagon. But in recent months, civilian demand has gained more than enough to keep up the momentum in spite of some easing in defense business.

One significant result is a strengthening of the backlog picture, after a very severe drop. Total backlogs of unfilled orders in the durable goods industries stand at $43.5 billion, compared with the $60 billion high in 1956.

Inventories Stabilize — OBE points out that the "turnabout in sales and new order trends has resulted in a slackening in the rate of inventory decline." For the first two quarters of this year, inventory declines averaged about $400 million a month. By the third quarter inventories were being chewed up at a $300 million a month rate, but this has now dropped to about $200 million, the rate in September, last officially tabulated month.

Inventory makeup has also changed with the new upward business cycle. Goods-in-process and purchased materials have generally stabilized. Finished goods continue to drop. Generally, this situation is common to both durable and non-durable fields.

Auto Question Mark — The picture is not complete, however, because of the unexpected failure of auto production to come back as expected this fall. Under a normal automotive production pattern, the rate of recovery would look even better.

The index of industrial production, which gained only a point in October, should pick up a total of at least three points, probably four, in November and December. An earlier prediction of an FRB index of 140 by the end of the year still holds.

Construction to Top $50 Billion

Fast Start—Official government predictions of 1,200,000 new home starts next year looks pretty good. The only hitch is that an expected tightening of money later in the year will create an uneven rate, with fewer started in the later months.

It will be the opposite curve from this year, when the rate started out low, with a buildup in the last half for a respectable annual total of 1,170,000 starts.

Big Help—The pickup in home building is a big factor in the recovery. The comeback in appliances, for example, wouldn't have happened without a good rate of home starts.

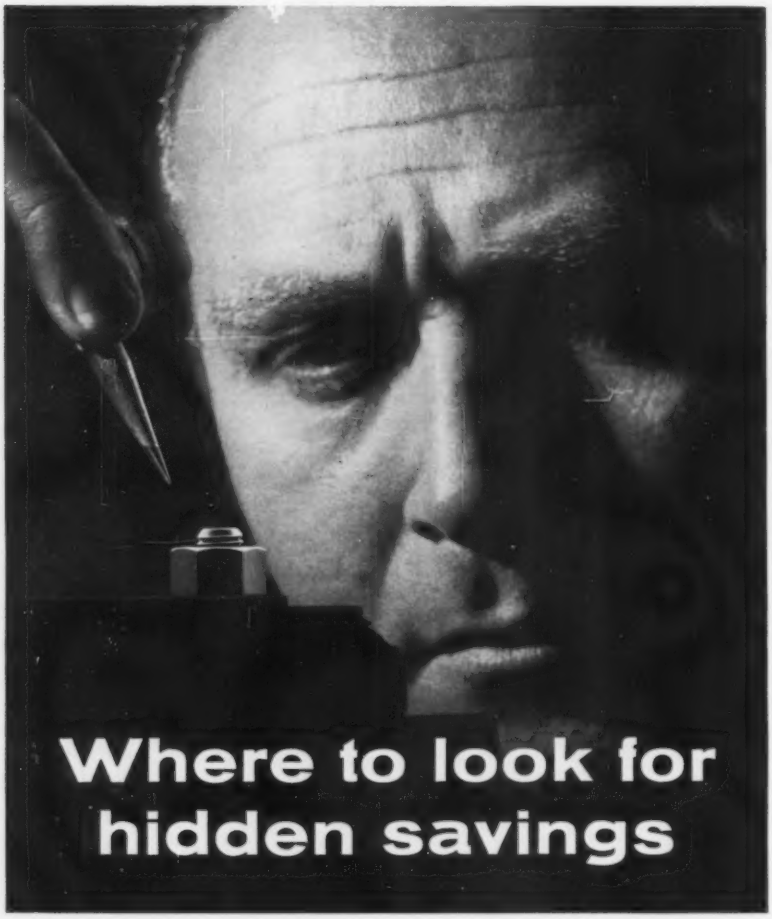
Appliances are now zooming along at a rate not seen since early 1956, with year-ago comparisons well ahead for refrigerators, freezers, ranges, dishwashers, and the like. October, 1958, totals for appliances are also ahead of October, 1956, but not up to the rates earlier that year.

Over $50 Billion—Overall, the government specialists expect total spending for new construction to be up 7 pct in 1959, passing the $50 billion mark for the first time.

But public buildings will provide most of the gains, with a bulge of over $2 billion expected in this category over this year's rate.

It's conceded in the estimates that money for home mortgages "probably will be less available at the comparatively low downpayment and interest rates prevailing in 1959." This means an inevitable slackening in the rate unless money is made easier during the year, not likely unless the recovery shows signs of running out of steam.

ECONOMIC FACTS ON FASTENERS



Where to look for hidden savings

- **Fastener value-analysis shows big dollar savings**
- **Quality improved at same time**

If you know what to look for, there are sizable savings to be found in standard fasteners. See what happened when the *RB&W Fastener Man* analyzed fastener usage:

Shown the merits of high strength bolts, a company standardized on them exclusively, saved $12,000 the first year, $28,000 the next.

Showing a manufacturer how to substitute high strength bolts for heavy head milled bolts, the RB&W Fastener Man pointed to a $4,500 annual saving on this item alone.

At a plant with 23,000 different fastener items in inventory, more than half were eliminated...cutting costs from buying to assembly.

Where special fasteners were used in heavy equipment, substituting cap screws offered $13,000 saving on a production run of 500 units.

So it goes. Using high carbon cap screws where costlier socket screws are not really needed . . . cap screws for studs and nuts in certain applications . . . replacing machined parts with cold headed pieces . . . there are plenty of ways to economize.

Take a look at your own fastener usage through the eyes of an RB&W Fastener Man. Contact Russell, Burdsall & Ward Bolt and Nut Co.

R B & W
114th year

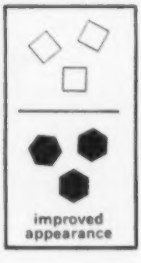
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

HEX and HEX: a major step in fastener simplification

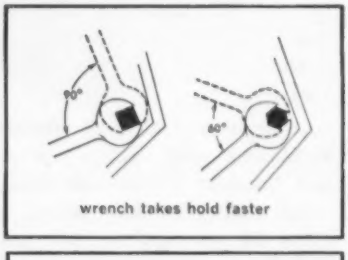
Under the new, RB&W Hex and Hex program, one hex head bolt and hex nut consolidates the best features of four other frequently used fastening units, all of which are intended to do the same job.

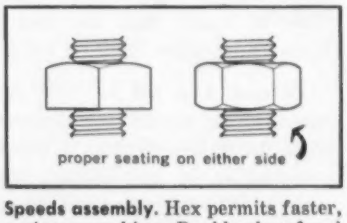
Simplifies inventory, speeds turnover. Streamlines ordering, stocking and usage.

Improves quality and appearance in the popular size range. In heading hex bolts, flow lines in the steel are distorted less than in square bolts. Strength is greater, tolerances closer. Hex heads are more attractive, too.



Cuts weight, reducing handling costs. For example, 1,000 Hex and Hex units in the ½" x 2" size weigh 25 lbs *less* than comparable square head bolts and square nuts.

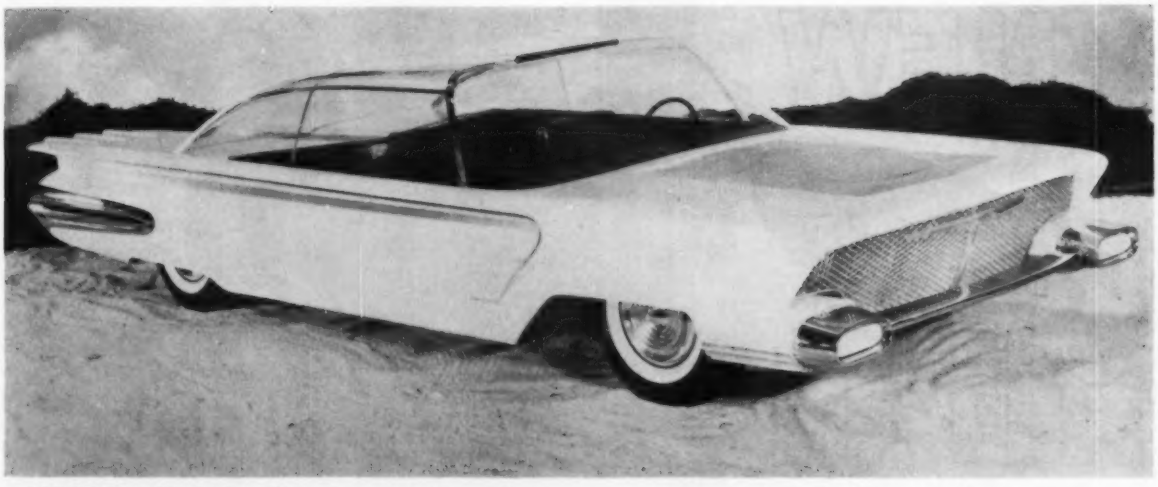




Speeds assembly. Hex permits faster, easier wrenching. Double chamfered hex nuts allow correct assembly from either side.

Cost no more than square head bolts and square nuts. Yet, look at the advantages. Ask the RB&W Man about it. Or, write for Bulletin HH-1.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



ALUMINUM DREAM CAR: The Pele, shown above, is a three-eighths scale model developed by Kaiser Aluminum's Industrial Design Dept. to suggest more uses for aluminum in autos. It's all-aluminum.

Aluminum Steps Up Sales Tempo

Kaiser Campaign Is Newest Industry Promotion Effort

All-aluminum car designs exhibited in Detroit are aimed at whetting designers' imaginations.

Some new ideas suggested might prove practical in future models.—By H. R. Neal.

■ Kaiser Aluminum Corp. is going full-speed-ahead in its campaign to sell auto industry stylists and engineers on the versatility of aluminum.

In Detroit last week, a series of presentations was held by Kaiser to suggest ways in which aluminum can be used in both functional and decorative applications. Kaiser called its presentations "Imagination in Aluminum."

Ideas Put Across — The second such "styling futurama" to be staged by the corporation (the first was a year ago), it carried an Hawaiian theme. And the result was enough to stimulate the drawing pen of almost any auto stylist. Sleek, low-slung designs of the not-too-far-distant future were projected on a wide-screen.

The styling stimulators covered the range of industry's offerings from small cars to larger sedans and a station wagon—all in aluminum and glass.

Small Cars Included — Some of Kaiser's ideas:

Designs for an American-type small car and special purpose vehicles employing both rear-engine and front-wheel drives.

Body panels of brushed or etched anodized aluminum, in clear or colored finishes, and aluminum with enameled finish.

Two-piece die cast aluminum doors, with sculptured surface. Sliding roofs.

Aluminum body frames. Rear deck opening from the curb side or either side.

Aluminum bumpers, incorporating rubber insert faces and parking "feelers."

Aluminum engines, liquid and air cooled, in flat or conventional type.

New aluminum textural patterns adaptable to both interior and exterior use.

Integral wheel, brake and hub of cast aluminum.

The Composite Car — The featured car, named the Pele (Pay-lay) for the goddess of volcanoes, was shown in both three-eighths scale model and in lifesize rendering. The company said it represents the composite of practical, proved developments in aluminum auto usage.

Roll-Away Hood — It has a 126 inch wheelbase, an overall length of 225 inches and height of 52¼ inches. Its main features include an all aluminum exterior. Mufflers are in cast aluminum pods forming the

NEW ELPAR TITAN

Fork and Ram Trucks

Capacities: 15,000-20,000 lbs.

Photograph of 16,000-pound-capacity model illustrates compactness and visibility provided by ELPAR Titan series.

ALL NEW.. unsurpassed compactness, visibility, speed, safety

The electric-powered ELPAR Titan R-12 series offers an unequaled combination of features:

For Your Production Department,
NEW OPERATING EFFICIENCY

Box car maneuverability . . . moves easily through 7-foot freight car doors . . . operates in confined areas . . . high travel and lift speeds.

For Your Operator,
NEW OPERATING EASE

"Picture window" vision forward . . . completely unobstructed view to rear and sides . . . dual controls . . . power steering.

For Your Safety Department,
NEW "TRI-SAFE" BRAKING SYSTEM

Safe stops in *every* situation . . . three independent brakes—dynamic, hydraulic and mechanical—*act in sequence* and are controlled by a *single toe bar* extending the width of the operator's compartment.

For Your Maintenance Department,
TRADITIONAL ELPAR DEPENDABILITY

Uprights are forged from high carbon steel . . . spherical self-aligning bearings on inner uprights and elevator reduce wear . . . high mounting of tilt cylinders eliminates upright twist and side sway . . . battery is easily accessible.

Get complete details . . . SEND FOR TITAN SERIES BULLETIN and "TRI-SAFE" BRAKING BULLETIN

ELPAR
ELECTRIC TRUCKS

THE ELWELL-PARKER ELECTRIC COMPANY
4299 St. Clair Avenue • Cleveland 3, Ohio

***Twice* the Life . . . *1/3rd* the Operating Costs**

Automotive Production

WEEK ENDING	CARS	TRUCKS
Nov. 29, 1958*	120,733	19,246
Nov. 22, 1958	138,727	24,838
Nov. 30, 1957	114,795	17,312
Nov. 24, 1957	151,846	23,605
TO DATE 1958	3,643,664	771,427
TO DATE 1957	5,580,564	995,023

*Preliminary Source: Ward's Reports

end sections of the front bumper. Engine is a water-cooled V8 with aluminum block and aluminum radiator.

The hood is a two-section roll-away door of aluminum extrusions and neoprene joining strips. The rear deck can either be die-cast or formed of sheet over an extruded frame assembly.

Engine Under Seat—Other models suggested additional features.

The Waimea is a 112-in. wheelbase station wagon with the engine and drive line units in front for a tunnel-free floor. A four or six-cylinder opposed engine is located directly beneath the driver's seat, which is entered through a front-opening panel.

The Menehune is another "approach to the small car concept." In two body styles, it features a rear located air-cooled aluminum engine and transmission.

Does It Get Results?—"The design ideas presented," said V. E. Flaherty, Kaiser Aluminum's automotive industry sales manager, "suggest a multitude of ways in which aluminum can be used effectively in producing better and more handsome cars, whether for conventional models or for specialized vehicles."

It's difficult to say just what effect promotion programs such as this have on auto industry designs. But other aluminum producers conduct programs of their own with the same purpose in mind—to promote aluminum.

Scatter-Gun Technique — Some stylists and designers admit many of the ideas proposed by aluminum producers are possible, that some are even practical and may eventually be used in future models.

But some aluminum people aren't sure of the value of these programs. A few have admitted privately they are using scatter-gun technique of shooting out a lot of ideas in hopes that some will hit the target.

The Final Test—There is little doubt that the auto industry is using more aluminum in its products every year. And there is evidence that more of the ideas—aluminum engines, wheels, bumpers, might not be too long in coming.

Kaiser is confident that when these changes come, consumers will be sold on the merits of aluminum and be willing to accept the changes as improvements.

American Motors Earns First Profit

American Motors president George Romney passed out his best news to date last week. AMC's smaller cars had finally turned the corner and carried the firm to a tidy $26 million profit for the fiscal year ended Sept. 30. It is the first black ink year in the company's history which dates back to 1954.

Net profit for the period was $26,085,134, equal to $4.65 a share. In 1957 the company sustained a loss of $11,833,200 or $2.12 a share.

Net sales for AMC and its consolidated subsidiaries rose 28.4 pct to $470,349,420 during the year. This compares with adjusted net sales of $366,391,830 in 1957.

First Dividend Declared — Mr. Romney also announced that directors have voted 5 pct stock dividend —the firm's first dividend. "We elected to pay a stock dividend at this time to stockholders because we felt they should share in the company's progress at the earliest moment. At the same time capital should be maintained and increased to meet expansion and other needs as Rambler automobile and Kelvinator appliance demand rises."

AMC's increased financial strength is evidenced by a $33.7 million rise in working capital and by the elimination of bank indebtedness.

The Bull of the Woods

I COULDA TOLD THAT EFFICIENCY MAN THAT A 60-YEAR-OLD MACHINE WON'T STAND THIS HIGH-SPEED AGE ANY BETTER THAN A 60-YEAR-OLD MAN!
AN EFFICIENCY MAN IS A GUY WHO TAKES A SIXTY-YEAR-OLD MACHINE AND MAKES IT 60 MORE YEARS OLD IN TWO DAYS!
T.M. Reg. U.S. Pat. Off.
AWAKENING THE DEAD
© 1958 by NEA Service, Inc.

Parts of Coleman stove and lantern made from Chase free-cutting brass rod, or Chase yellow brass tube are vital to the performance of this outdoor camping equipment.

Dependable Coleman Camp Gear relies on parts of Chase® Brass!

Heart of the well-known Coleman pressure-type lantern and the gasoline-fired stove is the generator and the valve body. Both are made of Chase free-cutting brass rod—have been for years. Chase yellow brass tube is also used in Coleman units. They write: "Chase materials are an integral part of Coleman quality."

If what *you* make uses parts machined from brass rod, it will pay you to investigate what Chase free-cutting brass rod can do for you. You will find an ideal combination of all these characteristics:

- **Easy machinability.** Takes heavy feeds and high cutting speeds with short brittle chips.
- **Excellent finished surfaces**—smooth, clean, free from rough edges. Cleaner threads, sharper knurls and a surface that takes polishing, plating, lacquering or enameling with minimum preparation.
- **Outstanding resistance to corrosion**—and copper will never rust.
- **High scrap value** compared with other metals reduces end costs.
- **Longer tool life** gives you increased production at a lower unit cost.

Ask your nearest Chase Representative about Chase free-cutting brass rod for your machined parts. Or write Chase at Waterbury 20, Connecticut.

Chase®
BRASS & COPPER CO.
WATERBURY 20, CONN.
Subsidiary of
Kennecott Copper Corporation

The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

Congress Will Up Ike's Budget

Military Spending Is Likely to Top $42 Billion

President's attempt to hold the spending line won't make it through Congress.

Too many Congressmen say, unofficially, they favor more not less spending.—By G. H. Baker.

▪ Ike's plans for holding the federal spending line are due to be trampled by the new Congress.

Victorious members of the new Senate and House, arriving in Washington daily, are declaring themselves for more, not less, government spending next year.

Billion for Defense—For defense contractors and subcontractors, a rise in spending of about $1 billion over present levels is indicated.

Defense outlays this fiscal year are running at the rate of $40.9 billion. President Eisenhower's new military budget is expected to call for around $42 billion. The new Congress may quite possibly revise the White House figures upward. The total available for defense in the new fiscal year may add up to well over $42 billion. The extra funds, if voted, will most probably be earmarked for projects involving missiles and exploration of outer space.

Opinion—Defense spending must rise, not level off, says Rep. George H. Mahon (D., Tex.), the influential chairman of the House subcommittee handling the defense money bill.

Costlier weapons, plus inflation, make a bigger defense budget absolutely necessary, Mr. Mahon declares. And he says the tense situations in Western Europe and in the Middle East do not permit any easing off of our total national defense effort in 1959.

For the non-military government departments and agencies, the White House is drawing up a "hold the line" budget calling for almost no new spending programs. But here again we can expect the new Congress to revise upward. It looks like we'll see the Congress vote more money for public housing, rivers and harbors, dams, roads, airports, and relief money for so-called distress areas.

Foreign Loan Program

The President may seek a three-year, $3 billion foreign loan program to be administered through the U. S. Development Loan Fund, next year. It would eventually replace most of the current foreign aid program.

Managers of the development fund are urging the President to ask Congress to change their operation from an annual appropriation to a permanent program with power to draw from the U. S. Treasury up to $1 billion a year.

Loans—In the first year of its operation, the fund has lent some $700 million to foreign countries. With some $1.6 billion in applications for loans from 45 countries, the fund would have to have a supplementary appropriation of about $500 million to finish out the current fiscal year, which ends June 30, at the present loan rate.

An expanded and permanent fund has been a key element of the Eisenhower Administration's plan to switch most foreign economic aid from the present gift basis to a loan program. Congress, however, has refused to go along, and has provided only year-to-year support—sharply below what has been asked.

Tensions Will Boost Spending

Touchy Situation — Military experts say there is little hope of any lessening in tensions between the U.S.S.R. and the Free World any time soon.

Instead, the outlook is for increased diplomatic snarling and a fresh rash of harassment by both sides.

Big Spenders — This appraisal, coming now when the White House is putting together its federal budget for the new fiscal year, almost assures still greater spending for U.S. and global defenses.

The State Dept. concurs on the gloomy outlook. Clearly, things will get a lot worse before they get better, say State Dept. officials.

Make Life Difficult — Harassing tactics like hindering the movement of U.S. rail and highway transport in Germany, and further shooting between Nationalist China and Red China can be expected.

The disarmament talks now in progress in Geneva are doomed to failure unless there is a miraculous change in the Russian attitude.

VAN HUFFEL

RECTANGULAR • ROUND • SQUARE

WELDED TUBING

THIS

BIG

Shown on this page, in white profile, are maximum and minimum sizes of Van Huffel rectangular, round and square welded tubing; in gauges from .028" to .250". For sizes and gauges in between, plus helpful engineering data, write for FREE 32 page Welded Tubing Handbook.

THIS SMALL

OR *ANYWHERE IN BETWEEN*

VAN HUFFEL TUBE CORPORATION • WARREN • OHIO

Boom Will Benefit Metalworkers

Lucrative Subcontracts Expected From Aircraft Makers

Aircraft companies are bidding for some fat aircraft and missile contracts.

No matter who wins, they'll get many of the parts from subcontractors.—By R. R. Kay.

▪ There's plenty of profit potential for metalworking in the coming boom in aircraft-missile making.

Fat contracts—running into hundreds of millions of dollars—are in the works. Hottest items right now: Manned aircraft.

Hot Craft—North American Aviation's B-70 and F-108 will be the first of a new generation of manned weapon systems. Industry insiders say no military aircraft in the world today comes even close to these two planes in performance.

As weapon systems manager, North American will assign big hunks of these systems to major contractors. Some 31 aircraft producers are pitching for a piece of the work.

The lucky winners, in every case, will subcontract for engineering and components with other companies, both large and small.

Share the Wealth—About 70 pct of every dollar for the B-70 and F-108 will go outside North American. NAA is also in charge of the ground support equipment and training of all hands.

It all adds up to a lot of business for metal producing and metalworking industries across the nation.

More Western Steel

Look for a 44 pct increase in the Western steel market by 1970. Then over three million more tons will be gobbled up in a year.

Sales of plates, shapes, and bars will jump 45 pct. The market for sheets may top 650,000 tons—a 60 pct hike. The demand for sheets will come from contractors' products as well as from appliances, containers, and auto parts.

Warehouses—How will the steel service centers fare in the coming upsurge? They'll ride right along with the tide for a 45 pct gain—will ship about 2.3 million tons in 1970.

These forecasts come from Ralph W. Seely, sales vice president, Columbia-Geneva Steel Div. of U. S. Steel. They were made at the recent American Steel Warehouse Assn. regional meeting in California.

Battle of the Jets

The battle for jetliner business still goes on here. Boeing won the first round. It got more orders for its 707 than Douglas got for its DC-8. However, another round is shaping up.

Both companies are asking the airlines if they'd be interested in smaller versions of the big ships. Both are thinking about a medium-range jetliner to operate in the 300 mile to 2000 mile range.

A Bowl From a 'Boom'

FORMING: A technician in the Chino Hill Research Lab of Aerojet General Corp., Azusa, Calif., removes a bowl-shaped metal part from the tank where it was explosive-formed from a flat blank.

Tidewater Oil Company's 200 million dollar refinery near Wilmington, Delaware. Six of its eleven processing units are largest of their types ever built!

SQUARE D CONTROL CENTERS

serve New

TIDEWATER REFINERY

Here's Why Square D is Your Logical Choice, too!

INCREASED SAFETY! • Bus bars fully enclosed, rigidly supported and have ample cross section. Circuits isolated by individually enclosed plug-in units. Disconnect handle gives maximum operator protection.

FLEXIBILITY! • Individual plug-in units or complete sections easily added, removed or exchanged. Pushbuttons, pilot lights, and selector switches readily added to unit doors.

INSTALLATION ECONOMY! • All wiring channels are large and accessible from front without removing units. No "wire fishing."

SPACE ECONOMY, TOO! • Up to six combination starters fit in a 20" x 90" section. Plug-in unit heights designed in space-saving increments of 3".

SUPERIOR DESIGN you can actually see and feel. Practical, modern styling. Greater structural strength gives more rigidity and assures precision alignment.

Write for **CONTROL CENTER BULLETIN...**
Square D Company, 4041 N. Richards St., Milwaukee 12, Wis.

(Top photo) In the refining area **Square D Control Centers** provide a portion of the centralized control of pumps and compressors. In the maintenance shop they control power, heating, ventilating and lighting.

(Lower photo) Another Square D Control Center, located in the Employe Relations Building, provides pushbutton control of air-conditioning units and compressors. Infirmary X-Ray equipment and parking lot lighting also are remotely controlled from this Center.

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE

SQUARE D COMPANY

Tool Buying Is on the Rebound

October Sales Are Tops for the Year

The recovery is not uniform throughout the industry.

But almost all builders are happy about the improvement in the outlook for next year. —By E. J. Egan, Jr.

▪ Machine tool buying spurted ahead sharply in October, making that month's total of net new orders tops for the year to date.

Comparison—Here's how the latest net new order figures compare with those for September, and for October last year:

Metal Cutting Machine Tools

October	1958—	$28.5 million
September	1958—	$20.1 million
October	1957—	$27.8 million

Metal Forming Machine Tools

October	1958—	$ 8.6 million
September	1958—	$ 8.0 million
October	1957—	$11.9 million

October's gains were not uniform throughout the industry, says Ludlow King, executive vice president of the National Machine Tool Builders' Assn. But he sees the spurt as a hint that business volume will be better in 1959 than in 1958.

"A thorough analysis of economic and capital goods factors indicates October might well be the upward turning point following the past 10 months' depression," he says.

Symbols May Replace Words on Nameplates

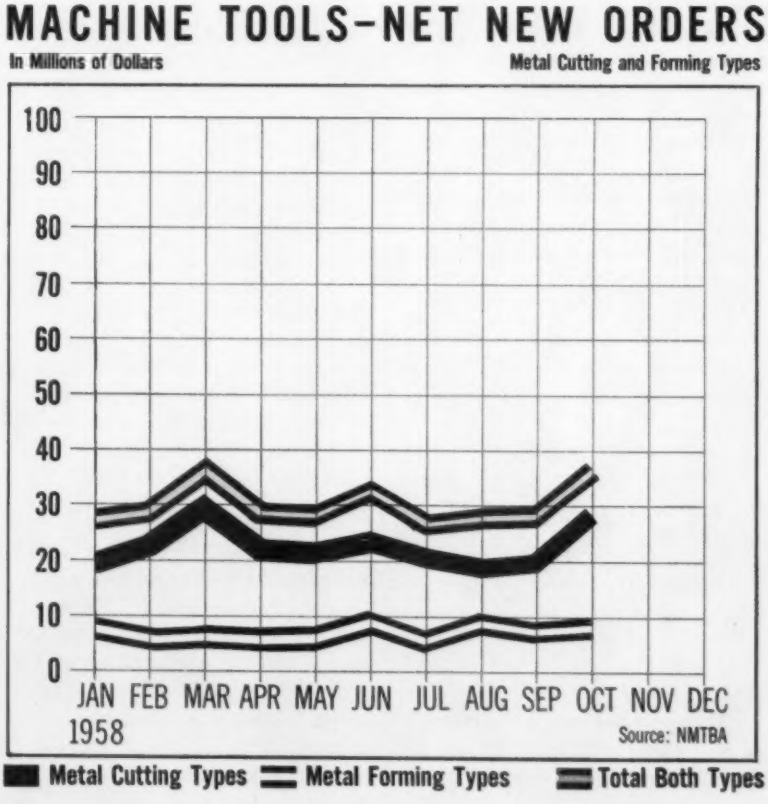
Nameplates and instruction plates on U. S. machine tools generally use words to name various parts and indicate their function to machine operators. A plan to convert these words to a set of internationally recognized and approved standard symbols is in the works.

The idea has been on the agenda of the International Organization for Standards (ISO) for many years. It now appears that an ISO recommendation may be approved by member nations in the near future.

U. S. builders got into the act officially early this year. An NMTBA committee to present the American point of view is headed by C. T. Blake, director of engineering for Warner & Swasey Co., Cleveland.

System—"There are about 80 different symbols already proposed by ISO, plus 13 or 14 new ones we think should be included," Blake says. Some are an abstract kind that replace such words as "start," "stop," "speed," "power on," and "power off." Others are pictographic types that describe physical things such as a work table or a drilling spindle.

If the few American suggestions are adopted, Blake feels a final ISO recommendation stands a good chance to be adopted by U. S. builders and users. Both groups would benefit, he believes.



INDUSTRIAL BRIEFS

Go-ahead for Bullpup — The Navy has awarded The Martin Co.'s Orlando, Fla., Div. a $20.4 million contract for production of the air-to-surface guided missile BULLPUP. The missile is designed for use by carrier-based Navy aircraft and shore-based Marine planes.

Design for Power — Chicago Bridge & Iron Co., Chicago, has received an $11 million contract to design, fabricate, and erect 13 penstocks for the Niagara Power Projects for the Power Authority of New York. Construction will begin in Jan. 1959 and be completed in Oct. 1962. The penstocks will be fabricated in the company's Greenville, Pa., plant.

Meter Deal—The A. O. Smith Corp., Milwaukee, has acquired the Erie Meter Systems, Inc., Erie, Pa.

Fellowships for Foundrymen—Wheelabrator Foundation, in cooperation with the Foundry Educational Foundation, Cleveland, has established 50 fellowships, each valued at $1,500, to be granted during the next 10 years. Fellowships are available to foundry employees for graduate study in engineering, science, foundry-related fields, marketing and business administration.

"How can you call me a failure? A man who is retired at the age of forty."

Borden Expands — The Borden Chemical Co. will construct a polyvinyl alcohol plant designed to produce 5 million lb per year. It would go on stream in Oct. 1959. The new plant, to cost $1½ million, will adjoin the company's present polyvinyl alcohol plant at Leominster, Mass.

Rundown on Missiles—A complete list of all missiles bought by the Army, Navy, and Air Force has been published by the Association of Missile and Rocket Industries. About 160 types are listed. AMRI, a nonprofit organization, has headquarters in the National Press Bldg., Washington, D. C.

An Export First—The first license for export of a U. S.-manufactured power reactor has been issued by the Atomic Energy Commission. The facility, manufactured by Westinghouse is a pressurized water reactor. It will be installed at the nuclear development center at Mol, near Antwerp, Belgium.

Facelift for Skelp—The United Engineering & Foundry Co. will rebuild and modernize the 10-in. skelp mill for Laclede Steel Corp.'s Alton, Ill., plant. Upon completion the mill will be capable of producing skelp up to 16-in. width. New coiling and handling equipment will increase capacity.

Diversification—Pittsburgh Coke & Chemical Co. has become a new basic supplier of the fumaric acid used in making plastics, paints, and chemicals, with completion of a new 2-million-lb-per-year plant at Neville Island, Pa.

Topp Acquisitions—Topp Industries, Inc., Los Angeles, manufacturers of automated devices for industry, plans to acquire U. S. Semiconductor Products, Inc., Phoenix, Ariz., and an affiliated company, U. S. Electronics Development Corp. The two companies are manufacturers of diodes and other semiconductor devices.

Aluminum Reaches High—Public Service Electric & Gas Co., Newark, N. J., plans to use over 60 all-aluminum transmission towers on a double circuit, 230 KV line from Hillsboro to North Branch, N. J., according to Aluminum Co. of America.

Vogel Elected—Carl S. Vogel, vice president, sales, Edgcomb Steel Co., Philadelphia, has been elected president of the National Association of Aluminum Distributors. Mr. Vogel has been associated with Edgcomb for the past 30 years in sales and executive capacities.

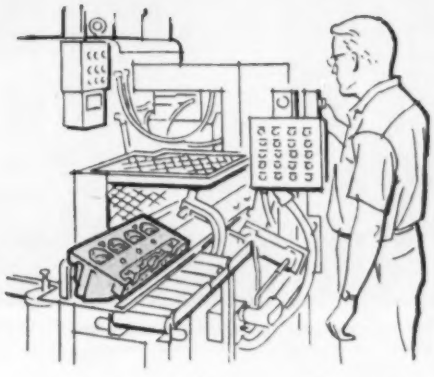
Plant for Pascagoula—The Fluor Corp., Ltd., has completed construction work on Coastal Chemical Corp.'s $2 million phosphate plant at Pascagoula, Miss. The plant includes a 75-tons-a-day phosphoric acid unit and 350-tons-a-day granulated ammonium phosphate fertilizer unit.

Powder Metal Directors — New board members elected to 3-year terms by the Powder Metallurgy Parts Manufacturers Assn. are: P. J. Failla, Johnson Bronze Co., New Castle, Pa.; W. L. Strawbridge, Sr., Precision Metal Products Co., Elwood City, Pa., and R. L. Pettibone, Eaton Mfg. Co., Coldwater, Mich. Mr. Failla will also serve as chairman of the association's technical committee.

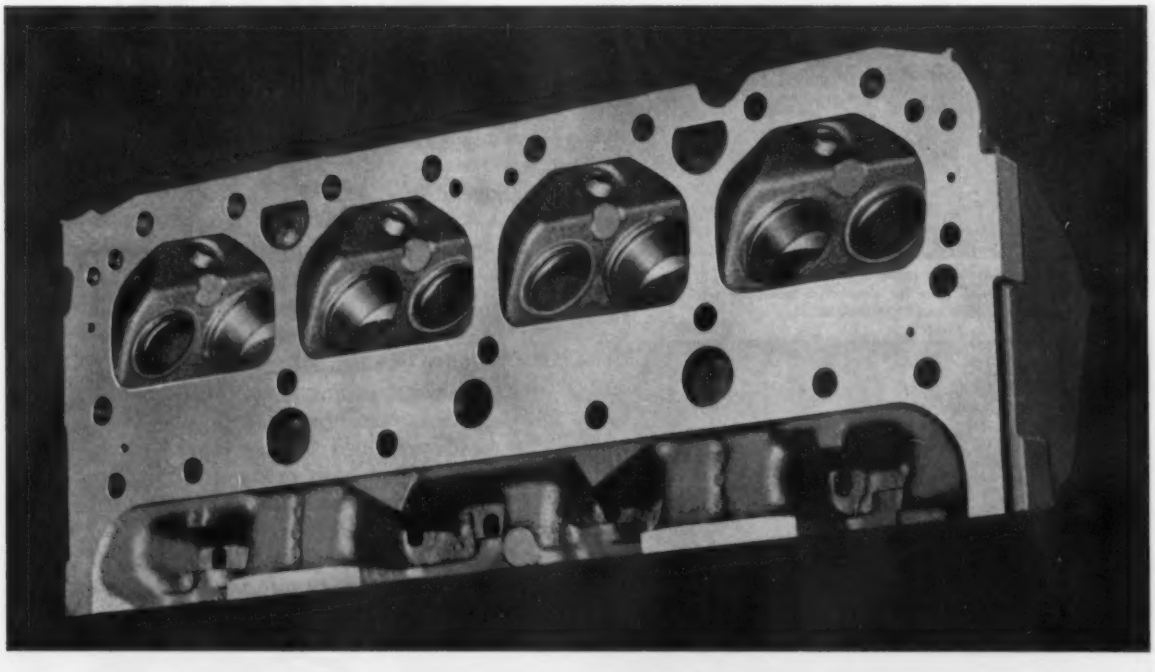
Southern Distributor — Kaiser Aluminum Co. has named U. S. Steel Supply, warehousing division of U. S. Steel Corp., its general line distributor for the Birmingham, Ala., district. It will carry a full line of aluminum sheet, plate, tooling plate, rods, bars, wire, structurals, tubing and pipe. J. P. Connor, is district manager of U. S. Steel Supply at Birmingham.

Move to Alton—The St. Louis sales office of the Federated Metals Div. of American Smelting & Refining Co. has moved from its former location at 4041 Park Ave. to Federated's new plant at Alton, Ill.

TOCCO* Hardening of Exhaust Valve Seats



Saves Cost of Expensive Alloy Inserts



• *In just 12.5 seconds* the four valve seats on this heavy-duty truck cylinder head are heated to 1650°F. An area of 3/32" perpendicular to the valve seat is hardened to a minimum of 42 Rockwell C. TOCCO's uniform, localized hardening permits the elimination of costly alloy inserts. The cost of induction hardening is a small fraction of the cost of these alloy inserts.

This unusual application indicates the wide scope of cost-saving possibilities available through the educated use of TOCCO Induction Heating. If your products require hardening, heating for forming or brazing, it's better than an even bet that TOCCO Engineers can save you money.

THE OHIO CRANKSHAFT COMPANY

***Mail Coupon Today*— NEW FREE Bulletin**

The Ohio Crankshaft Co. • Dept. A-12, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating."

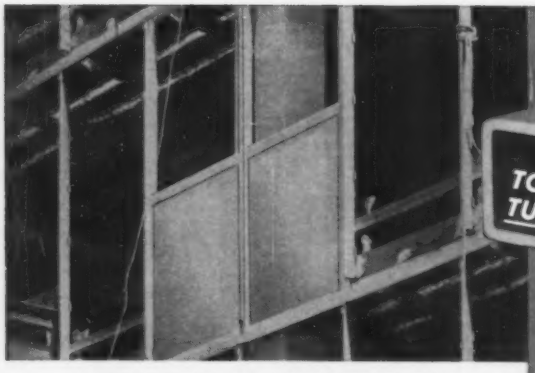
Name_____

Position_____

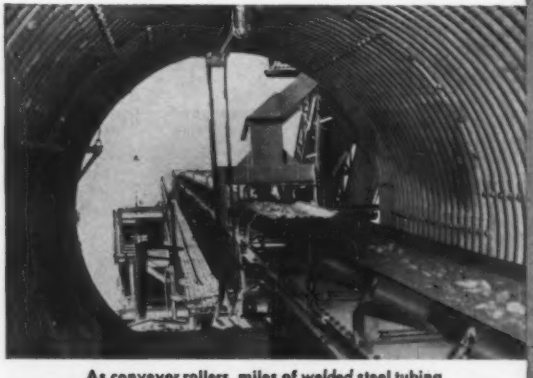
Company_____

Address_____

City_____ **Zone**____ **State**_____



In curtain wall framing, welded steel tubing fabricates readily—joins easily—saves weight.



As conveyor rollers, miles of *welded* steel tubing are used each year for simplified fabrication, rugged strength and light weight.

Square carbon steel tubing creates a highly efficient load-bearing curtain wall in this new school design.

Easy to fabricate, easy to join, brute strong and light weight, welded steel tubing makes up this entire crane boom.

The strongest load-bearing section you can use!

WELDED TUBING

Carbon • Alloy • Stainless Steel

The tubular form is engineering's most efficient structural section—and *welded* steel tubing offers in addition the greatest uniformity and formability of them all.

Welded tubing is concentric about its axis, uniform in wall thickness, readily formed to any cross section and available in many grades from low carbon through stainless steel.

When you have a structural problem requiring high strength-to-weight *plus* dependable uniformity—contact your quality *welded* tube producer.

FORMED STEEL TUBE INSTITUTE

Specific information on welded tubing is available on request to:

FORMED STEEL TUBE INSTITUTE

850 HANNA BUILDING • CLEVELAND, OHIO

An Association of Quality Tube Producers

LC-584

W. H. Babbitt, Jr., promoted to manager, Pittsburgh Warehouse, Jones & Laughlin Steel Warehouse Div.

I. E. Weston, promoted to chairman of the board and chief executive officer, Weston Hydraulics, Ltd., North Hollywood, Calif., subsidiary of Borg-Warner Corp.; **F. O. Hosterman,** promoted to president and general manager; **A. E. Shumate,** named executive vice president and assistant general manager.

M. G. Dial, named chairman of the board, Union Carbide Corp., New York; **H. S. Bunn,** becomes president; **Birny Mason, Jr.,** becomes executive vice president.

R. W. Jordan, elected vice president, The Hamilton Foundry & Machine Co., Hamilton, O.

Roland Lehr, elected president, Gear Grinding Machine Co., Detroit.

R. H. DeMott, named president and general manager, Acheson Mfg. Co., Rankin, Pa.

J. C. Wallace, appointed vice president and general manager, Walworth Co.

E. L. Gay, elected secretary-treasurer, Hewitt-Robbins, Inc., Stamford, Conn.

E. W. Place, becomes vice president and chief engineer, Holex Inc., Hollister, Calif.

C. P. Greenlee, named manager, manufacturers products sales, Cleveland office, and **E. J. Walsh,** becomes manager, sales, Detroit office, American Steel & Wire Div., U. S. Steel Corp.

E. D. Pieri, appointed manager, new product development, Stran-Steel Corp., Detroit.

M. H. Barnes, appointed manager, crystal products, Linde Co., Div. of Union Carbide Corp.

A. M. Kelly, promoted to district sales manager, San Francisco, Duff-Norton Co., Pittsburgh.

C. I. MacGuffie, appointed manager, Special Products Dept., Air Reduction Sales Co., New York.

Following men have been promoted to posts at A. M. Byers Co.'s plant in Ambridge, Pa.: **E. A. Turner,** maintenance superintendent; **H. S. Stevenson,** manager, Conditioning Dept.; **L. H. Rader,** superintendent, rolling and finishing mills.

G. J. Downing, appointed chief combustion engineer, Buffalo steel plant, Republic Steel Corp.

D. T. Jaeger, named director, personnel, **H. D. Peacock,** elected chief engineer and **H. R. Silver-**

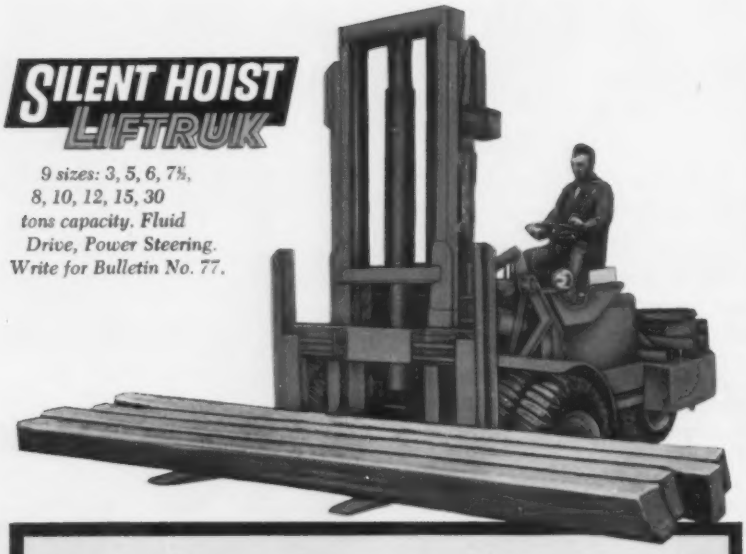
Nathan Cohn, named vice president, technical affairs, Leeds & Northrup Co., Philadelphia.

D. E. Moat, becomes vice president, marketing, Leeds & Northrup Co., Philadelphia.

J. F. Quereau, becomes vice president, manufacturing, Leeds & Northrup Co., Philadelphia.

SILENT HOIST LIFTRUK

9 sizes: 3, 5, 6, 7½, 8, 10, 12, 15, 30 tons capacity. Fluid Drive, Power Steering. Write for Bulletin No. 77.



shrink days into hours...

Tedious, costly work of Loading, Unloading and Stacking that take many men, many days can be compressed into a few hours . . . with just *one* man operating SILENT HOIST materials handling equipment . . . *releasing crews for other productive chores.* Costs rising? Competition rugged? SILENT HOIST may have an interesting answer for you! Details of some important case-histories will be furnished—cheerfully, without obligation.

SILENT HOIST & CRANE CO.
Brooklyn 20, N.Y.

SILENT HOIST KRANE KAR

HYDRAULIC Boom Swinging, HYDRAULIC Topping, HYDRAULIC Telescoping, HYDRAULIC Load Hoisting! Fluid Drive, Power Steering. 5 Sizes: 1½, 2½, 5, 10, 12½ ton capacities. Ask for Bulletin No. 79.

thorn, appointed director, manufacturing, Marine and Industrial Engine Div., Chrysler Corp.

C. B. Zimmerman, named manager, mechanical engineering, DeWalt Div., American Machine & Foundry Co., Lancaster, Pa.

J. S. Urbanik, appointed manager, plant operations, Electrical Conductor Div., Kaiser Aluminum & Chemical Corp.

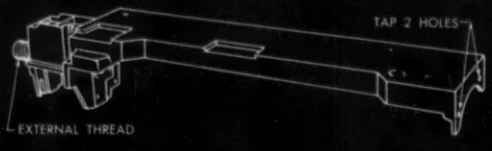
W. E. Linne, named manager, Newark, O., plant, Kaiser Aluminum & Chemical Corp.

A. E. Dudek and **Richard Carlson,** named superintendent and assistant superintendent, respectively, at No. 8-1 Open Hearth, Brackenridge Works, Allegheny Ludlum Steel Corp.

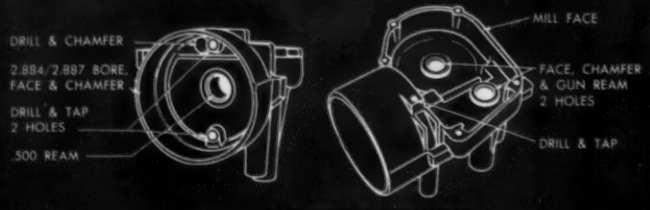
J. A. Hebling, appointed metallurgist, Tin Plate Sales Div., Republic Steel Corp., Cleveland.

W. W. Bumpus, appointed manager, government liaison office in

Ready to produce and produce and produce



SPEEDOMETER FRAME



WINDSHIELD WIPER HOUSING

These two machines are shown on our assembly floor ready to ship. One is a simple double-end machine with no indexing, the other a large center-column machine with indexing.

Both machines operate on die castings at high production rates. Both have power clamping and unclamping. Each operator removes a finished part, puts a new one in the fixture and presses buttons to clamp it.

The customers approved test runs here on our assembly floor. They continue to get good production because of good basic design and rugged, accurate construction.

Speedometer Frame 600 parts per hour is the gross production on the double-end machine (left). The left unit threads a stem with a self-opening die head while the right unit taps two holes. Another Kingsbury (not shown) operates on 11 holes in the same part.

Windshield Wiper Housing 460 parts per hour is the gross production on the big 13-spindle machine. A 43-inch index table holds seven work fixtures. The face to be milled is on top.

The first unit at the man's left mills the face at 3500 rpm. It is 30° right of the radial centerline through the station. For the holes in the center sketch there are four horizontal units, each 60° left of the radial centerlines.

Four vertical units operate on holes in the right sketch. A combination tool machines the .500 hole and 2.884 bore concentric within .003 T.I.R.

Special features include —

— Filtered coolant for all tools and gun reaming of two holes for a high finish.

— Oil mist lubrication for the multi-spindle auxiliary heads.

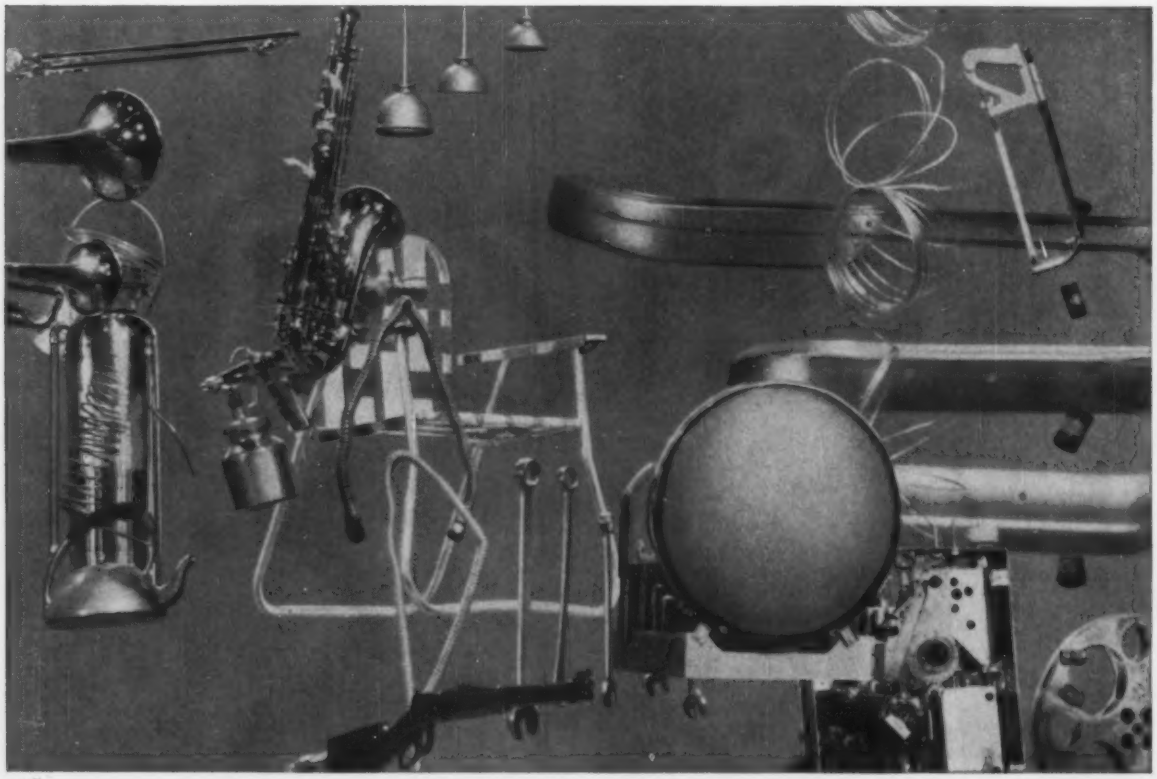
— Lights that identify any unit that fails to complete its cycle.

Little downtime, few rejects Our customers tell us that their Kingsburys run month after month without trouble. A Kingsbury can do the same for you. Kingsbury Machine Tool Corp., Keene, New Hampshire.

KINGSBURY

MULTI-UNIT AUTOMATICS

Columbia-Southern Trichlor provides economical, efficient



Degreasing units are available that will clean anything from multi-ton generator stators to tiny watch gears.

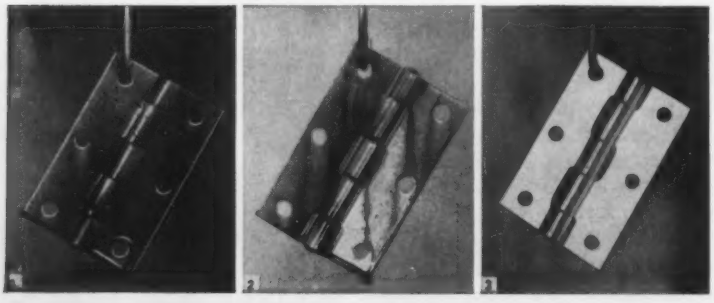
The modern stabilizer in Columbia-Southern Trichlorethylene has aided metal fabricators in eliminating a number of troublesome degreasing problems.

In the past, many plants experienced extreme difficulties, resulting in damage to work or to the degreaser unit. Frequently these difficulties could be traced to use of inadequately stabilized solvents.

Columbia-Southern Trichlor, on the other hand, is formulated to provide a stabilizer that assures built-in chemical protection against breakdown under light, heat, oxygen, acids, moisture and repeated distillations.

Sludge formation is kept to a minimum as this protection extends itself to the oil soils removed in degreasing.

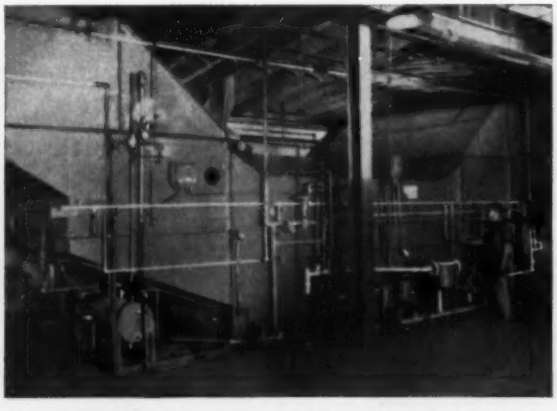
Degreasing action starts as soon as the part is conveyed into the Trichlor vapor. The vapor condenses on the part immediately. The liquid solvent, now laden with the grease it has removed, drips into a boiling sump.



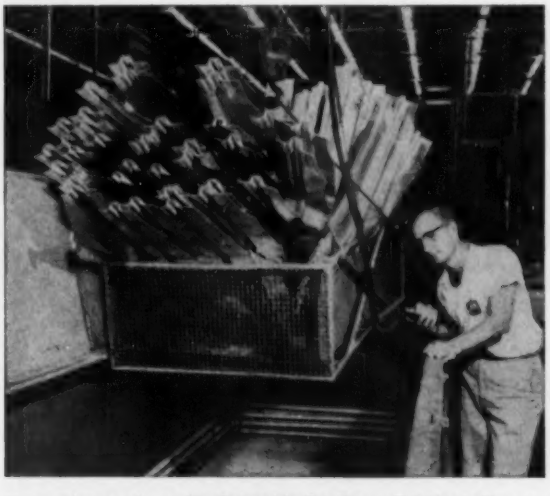
1. A hinge covered with grease, represents a typical metal part, ready for the degreasing process.
2. Vapor action has started—much of the grease has already been dissolved and carried away by the condensed solvent.
3. The process complete—the hinge leaves the vapor degreaser, clean and dry.

with its modern stabilizer low-cost vapor degreasing

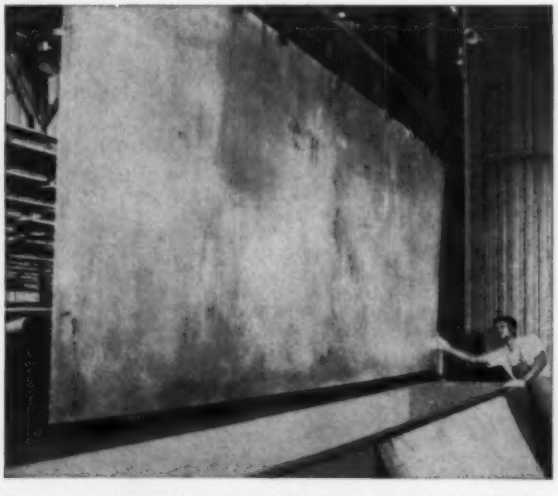
Lamp reflectors are degreased in this manually operated tank type vapor-spray unit. The unit is relatively inexpensive and it occupies very little floor space.



Fully automatic vapor—spray—vapor unit is used by this toy manufacturer for degreasing. Conveyors carry parts through all processing operations.



Vapor degreasing with Columbia-Southern Trichlor offers an extremely flexible and low-cost cleaning method for parts ranging in composition from aluminum to steel, zinc, brass, magnesium, titanium, special alloys.



Aluminum sheet and formed parts are particularly sensitive to improperly stabilized solvent. High-stability Columbia-Southern Trichlor is now specified by many large volume aluminum fabricators for efficient degreasing.

Columbia-Southern Technical Service representatives have earned a top reputation for working with customers in trouble-shooting and in establishing more effective and economical procedures for degreasing. Their services are at your disposal.

Have Columbia-Southern's experts check the efficiency of *your* degreasing operation or help *you* with your solvent specifications. Just contact our Pittsburgh address, or any of the fourteen conveniently located District Sales Offices listed below.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center • Pittsburgh 22, Pennsylvania

DISTRICT OFFICES: Cincinnati, Charlotte, Chicago, Cleveland, Boston, New York, St. Louis, Minneapolis, New Orleans, Dallas, Houston, Pittsburgh, Philadelphia, San Francisco IN CANADA: Standard Chemical Limited

Billet Forgeability Improved...$2300 Monthly Savings

...with Selas continuous heat processing

SELAS fast-heating techniques for hot working operations are proving that steel heated rapidly—with no soaking necessary—exhibits improved metal flow beyond that of steel heated slowly and soaked.

About a year ago, a large Eastern steel mill installed a specially-designed Selas rotary hearth furnace to heat steel billets for forming of special aviation parts and other close-tolerance forgings.

The following 15 economic factors prove that this steel mill's investment in Selas continuous heat processing equipment yielded immediate returns in reduced costs and improved product quality:

Material Saving

Scale produced during the 11-min heating cycle of a 4-in. square billet, is 0.004 in. thick. This loss in weight is less than 0.25%, compared with 6-8 times that amount when heating to forging temperature in conventional furnaces. At only 1% saving, $1,000 per 40-turn month is recovered—without considering effect upon product quality, machining cost, die wear and similar side effects of excessive scale.

Product Quality

Short cycle heating, to 2250°F in only 11 min produces finer grain, greater forgeability at temperature, improved material flow in the press, and, therefore, a tougher, stronger forging.

Floor Space

The characteristic compactness of Selas high capacity equipment . . . with heat directed into the workpiece, not the work area . . . results in a 60% saving in floor space. Pitch diameter of this 11,000 lb per hr furnace is only 13¾ ft. The smallest conventional furnace offered for this duty had a pitch diameter of 21 ft covering 2½ times as much area as this Selas unit.

Product Value

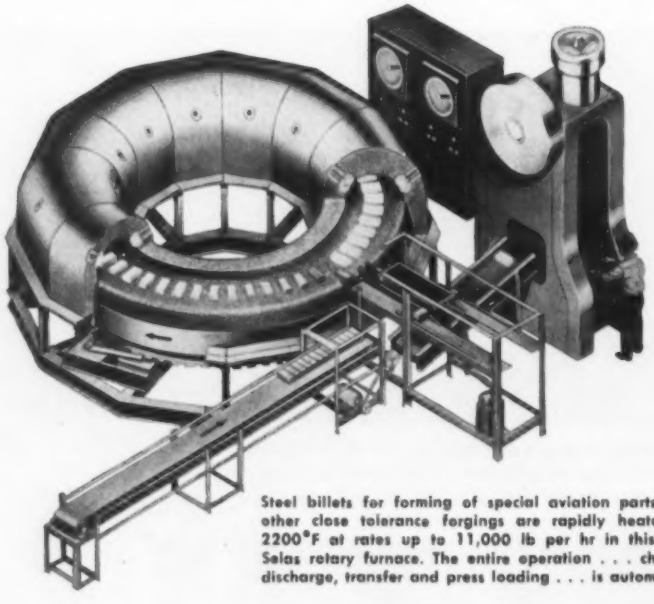
In slightly more than one 40-turn month, the product value of the billets processed equals the cost of the furnace and mechanical equipment.

Work in Process

Less than 1 ton of material is in the furnace at one time, as compared with 11 tons under a conventional 2-hr heating program.

Labor Requirements

Automatic handling of heated billets makes press operation a one-man job—saves $1300 per month.



Steel billets for forming of special aviation parts and other close tolerance forgings are rapidly heated to 2200°F at rates up to 11,000 lb per hr in this new Selas rotary furnace. The entire operation . . . charge, discharge, transfer and press loading . . . is automated.

Process Coordination

Fitted into the processing line, the furnace forms one important unit, with the press, trimmer and delivery conveyor completing the production picture. The custom-built rotary furnace was shipped from Selas, assembled in sections, and installed with minimum interference to the customer's production operations.

Maintenance

Simple, reliable operating and control equipment, rugged construction, and absence of special atmosphere equipment, simplify routine maintenance. Sectionalized construction will make eventual relining quick and economical. Furthermore, a Selas factory-based service engineer supervised installation and start-up, instructed personnel in operation and maintenance, and is available on call.

Material Handling

Completely automatic for billets weighing up to 55 lb; manual handling is used for heavier billets.

Automatic Operation

Entire heating cycle is automatically controlled, requires only intermittent loading of charge table, occasional check of temperature instruments.

Temperature Control

Billets are delivered metallurgically uniform throughout each billet and from billet to billet.

Production Requirements

The furnace supplies sufficient material for normal press operation with some reserve capacity.

Equipment Flexibility

The furnace heats billets from 3¼ in. square x 5.1 in. long, to 7½ in. square x 24 in. long. Steels handled include types 1030, 4620, 4815 and 8720.

Fuel Efficiency

Fuel cost, without recuperation, averages only 3% of raw material value.

Human Element

The automatic control eliminates variations due to the human element. Also, the furnace and press cycles are synchronized to enable delivery of a properly heated billet to the press immediately as forging of the preceding billet is concluded (in effect, pacing the press operator).

* * *

For case histories covering other steel mill heat processing operations, as well as heat treating, heating for hot working and brazing, send for reprint "An Economic Appraisal of Continuous Heat Processing." Address Dept. 112.

SELAS CORPORATION OF AMERICA DRESHER, PENNSYLVANIA

Heat and Fluid Processing Engineers

DEVELOPMENT • DESIGN • CONSTRUCTION

Washington, D. C., Consolidated Electrodynamics Corp., Pasadena, Calif.; **A. P. Stuhrman,** appointed director, Electro Mechanical Instrument Division.

Irving Dulberg, appointed manager, research and quality control, J. H. France Refractories Co., Snow Shoe, Pa.

G. A. Hanke, named product manager, stainless tubing, Allegheny Ludlum Steel Corp., Pittsburgh.

Dr. F. C. Langenberg and **G. E. Hutchinson,** appointed material and process engineers, Crucible Steel Co. of America.

R. E. Melampy, appointed safety engineer, Armco Drainage & Metal Products, Inc., a subsidiary of Armco Steel Corp., Middletown, O

R. J. Kurtz, Jr., named field service engineer, A. M. Byers Co.'s Pittsburgh division office.

Benny Silverstain, promoted to treasurer, Empire Steel Corp.

A. C. Westrom, appointed director, engineering, research and development, Hubbard & Co., Chicago.

R. V. Clute, appointed assistant to the vice president, sales, Huck Mfg. Co., Detroit.

A. X. Hiltgen, promoted to technical service manager, Activated Carbon Div., Pittsburgh Coke & Chemical Co., Pittsburgh.

F. R. Meyer, appointed district sales manager, Wheeling Steel Corp.'s Detroit office.

D. E. Oyster, appointed manager, Southwest regional office, Denison Engineering Div., American Brake Shoe Co., Columbus, O.

C. J. Harney, appointed sales manager, Swepco Tube Corp., Clifton, N. J.

Dr. L. G. Tompkins, named technical manager, Petrochemicals Dept., Organic Chemicals Div., American Cyanamid Co., New York; **Dr. J. C. Pullman,** appointed assistant to the division's commercial development manager.

J. W. Touhy, promoted to assistant sales manager, Wilton Tool Mfg. Co., Inc., Schiller Park, Ill.

T. J. Gorman, appointed general superintendent, Extrusion and Cold Draw Dept., Watervliet, N. Y., Works, Allegheny Ludlum Steel Corp., Pittsburgh.

A. H. Greller, appointed a marine sales engineer, Midwest territory, Dravo Corp., Pittsburgh.

OBITUARIES

J. H. Walsh, former vice president, Inland Steel Co., Chicago.

R. C. Fish, vice president, The M. A. Hanna Co., Cleveland.

G. E. Gernon, 87, secretary, Gisholt Machine Co., Madison, Wis.

How do you measure the real cost of your heat processing?

A continuous furnace is more than just a brick-lined structure built to heat a material; it is a processing tool.

Like all processing tools, it must be evaluated on an overall basis. Fuel consumption and efficiency may be completely outweighed by many more-important economic factors encompassing your workpiece, your total production program, and your work force.

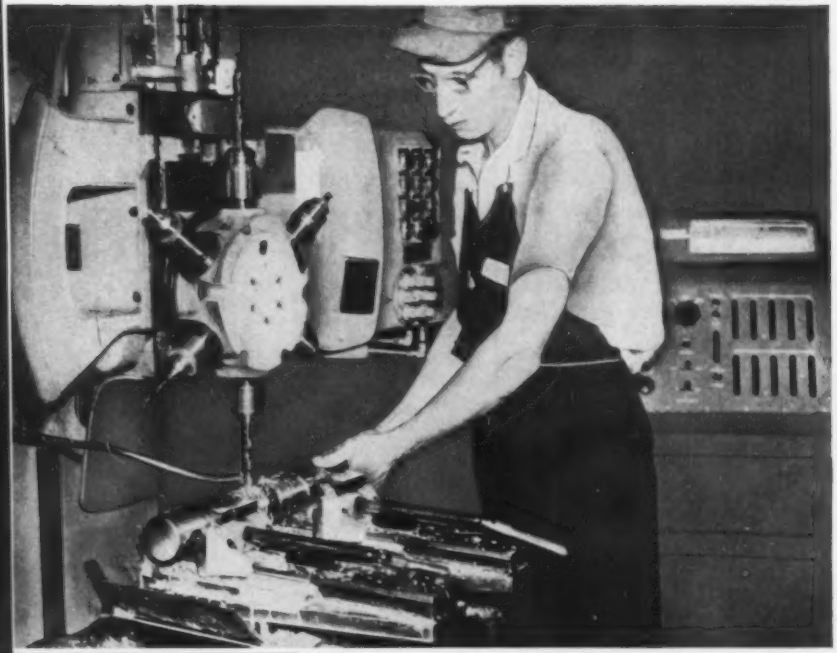
Your evaluation may well prove that an investment *now* in Selas continuous heat processing will bring immediate returns in reduced costs and improved product quality. (See case history on facing page describing fast heating for hot working).

SELAS

61% Average Time Savings on 5 Parts;

Burgmaster

tape controlled



SIMPLIFIED TAPE PREPARATION

1. Simple hand-punched 10⅝" wide tape. Decimal dimensions and machining sequence data is punched directly into the tape (requiring no special training, codes or computers) at an average rate of one minute per command block. Punched tapes are tooling which can be stored and re-used indefinitely.

2. Flexowriter Typewriter Punched Standard 1"–8 Hole Tape. If desired the system can be provided with standard 1"–8 hole tape control. Tapes can be quickly prepared on a Flexowriter Typewriter, by a girl typist, by typing in decimal coordinates, the spindle sequence, auxiliary functions, etc. Duplicate tapes can be automatically produced from an original punched tape.

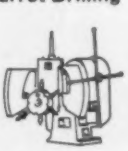
Continuous Position Readout
The Control Display is an electric micrometer which shows, at all times, the actual position of the table to three decimal places and the number of the operation being performed in the machining sequence. The Display reads table positions to +.0000" −.0005"

4 Modes of Machine Operation
The Electropoint System provides 4 modes of operation.
1. Manual Control – for set-up, etc.
2. Semi-automatic control – for single parts, etc.
3. Complete automatic tape controlled operation.
4. Standard Burgmaster Automatic Hydraulic Control (Electropoint completely cut out by pressing a button).

Specialists in High Production Turret Drilling

1C Manual Power Index ⅜" Capacity

2B Manual Power Index ¾" Capacity

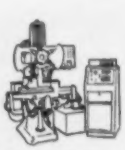


2BF Flange Mounted Power Index ¾" Capacity

2BH Automatic Hydraulic ¾" Capacity

3BH Automatic Hydraulic 1½" Capacity

2BR Ram Type Radial Drill ¾" Capacity



2BHT–3BHT Automatic Tape Controlled ¾" and 1½" Capacity

$35 Vise Substituted for $400 Fixture

at Jeffrey Manufacturing Co., Columbus, Ohio

Six-Spindle Turret Drill

with *Automatic* Numerically Controlled Positioning Table

Sixty-one per cent average time savings on five parts ranging from 8640 steel to fiber board, using only simple holding vises instead of expensive fixtures to hold close tolerances, is easily accomplished on a Burgmaster Electropoint Six-spindle Turret Drill. The elimination of expensive fixtures greatly reduces the cost per part because many of these parts are produced on a one-time basis.

The 3" diameter 8640 steel coupling pin formerly machined on a vertical drill press in four minutes is now automatically machined in 2.6 minutes. Tolerances of ±.001" are held and the operator has time during the cycle to burr the parts in four places on a bench drill.

And there are additional advantages:

1. The Automatic Cycle reduces fatigue—and produces consistent accuracy with no scrap loss.
2. Tools run at most efficient preselected speeds and feeds—greatly extends tool life—holds tool cost per piece to a minimum.
3. Quick set-up permits economical machining of small lots—and provides maximum flexibility and versatility.
4. Greatly reduces the number and types of machine tools required to handle a given production.
5. Shortens lead time to put new prints into production—quickly and at minimum expense.

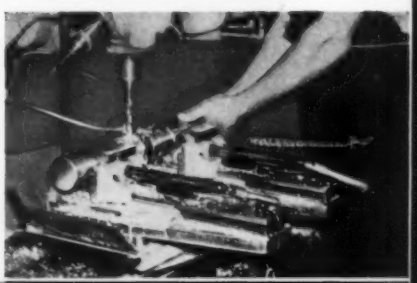
The Burgmaster Electropoint Control System can be applied to either the Model 2BHT—6 spindle or 3BHT—8 spindle Turret Drills, which are machines that are ideally suited for automatic tape control. The standard hydraulic Burgmaster controls are maintained, including pre-selective spindle speeds, infinitely variable pre-selective feeds, selective rapid approach and return, skip indexing, precision depth control, and simple manual controls for set-up. The Electropoint System automatically controls all machine functions, selects spindles in any sequence, automatically positions the table simultaneously on two axes, and clamps it in position while machining operations are being performed. All operations are carried out at their most efficient rate for high finish, precision, speed, and longest tool life.

Check into Burgmaster Electropoint Tape Controlled Turret Drilling, Tapping, and Boring Machines for your work. They can save you money from prototype to mass production work. There is a Burg direct representative or dealer near you. Call him—there is no obligation.

Write for Bulletin describing Burgmaster 6 and 8 spindle Electropoint Tape Controlled Turret Drilling, Tapping and Boring Machines. Describes how to program a part, make a punched tape, and put the job on the machine for automatic production. A thirty-minute 16mm sound film showing all Burgmaster Turret Drills in operation is available from any office without charge.

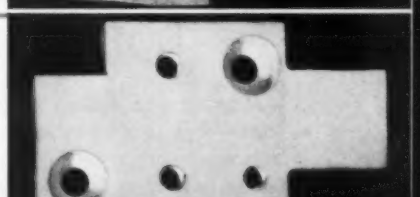
JOB FACTS

PART I: Coupling Pin 3" diameter.
Material: 8640 Cold Finished.
Operations: Drill ½" thru, 2¾" dia. ⅛" in from each end. Burr 4 places on bench drill during automatic drilling cycle.
Former Method: Vertical drill press.
Former Time: 4 minutes.
Present Method: Burgmaster 2BHT Electropoint Automatic Turret Drill.
Present Time: 2.6 minutes.
Savings: 35%—$35 clamps instead of $400 fixture.



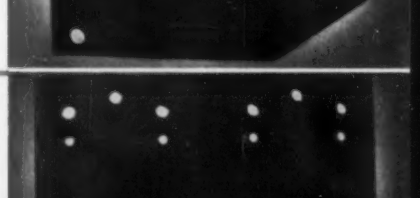
PART II: Arc Shield 3/16"x2⅞"x6⅜"
Material: Asbestos Board.
Operations: Drill 4 holes.
Former Time: 1.2 minutes on drill press.
Present Time: .23 minutes on Burgmaster 2BHT.
Savings: .97 minutes each or 80%.

PART III: Arc Shield Support ⅜"x1⅞"x3 11/16"
Material: Dilicto Grade NC
Operations: Drill 5 holes, counterbore 2 holes, tap 3 holes.
Former Time: 4.8 minutes on drill press.
Present Time: 2.5 minutes on Burgmaster 2BHT
Savings: 2.3 minutes each or 50%.



PART IV: Panel ⅜"x2 9/16"x4⅝"
Material: Vulcoid.
Operations: Drill 7 holes, 3 different diameters.
Former Time: 5.5 minutes on drill press.
Present Time: 1.3 minutes on Burgmaster 2BHT.
Savings: 4.2 minutes each or 76%.

PART V: Base for Fuse ¼"x4"x7"
Material: Fiber Board.
Operations: Drill 20 holes, countersink 8 holes.
Former Time: 7.2 minutes on drill press.
Present Time: 2.8 minutes on Burgmaster 2BHT.
Savings: 4.4 minutes each or 64%.



BURG TOOL
MANUFACTURING COMPANY, INC.
15001 South Figueroa Street, Gardena, California
Tel. FAculty 1-3510, TWX—Compton, California 6011

BURGMASTER DIRECT SALES OFFICES:

NEW JERSEY: BURGMASTER EASTERN SALES DIV., 86 N. Maple, Ridgewood, N. J., Ph. GI. 4-3002, TWX—Ridgewood, N. J. 724
CHICAGO: BURGMASTER MACHINERY, INC., 5329 Lincoln, Chicago 25, Ill. Ph. Long Beach 1-1178, TWX—CG 3353
CLEVELAND: BURGMASTER OHIO SALES DIV., 14706 Detroit Ave., Cleveland 7, Ohio, Ph. AC 6-3700
DETROIT: BURGMASTER MICHIGAN SALES DIV., 13730 W. 8 Mile Rd., Detroit 37, Mich., LI. 8-4333
SAN FRANCISCO BAY AREA: WALT COOPER, 1341 Old Country Rd., Belmont, Calif., Tel. LYtell 1-0309
Plus dealer representatives in other industrial centers.

When you buy from Ohio Seamless

YOU PRESS THE BUTTON
OHIO SEAMLESS
DOES THE REST

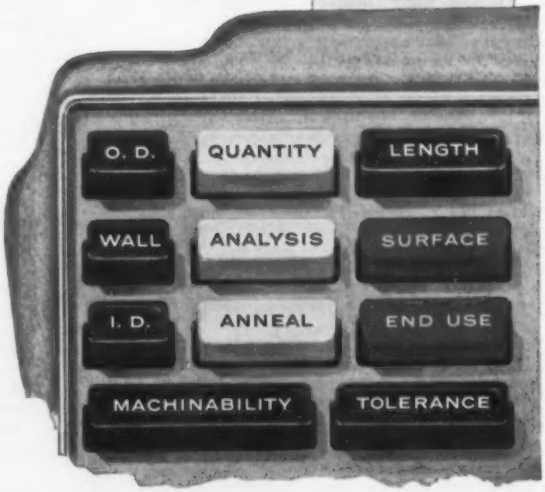
Buying steel tubing from Ohio Seamless doesn't cost—it *pays*. Our minimum quantities are generally smaller than you may realize . . . often as small as 100 to 150 feet, in certain seamless grades and sizes.

When you buy from us, you're dealing with tubing *experts* . . . men who can recommend the *exact* Ostuco Tubing to suit your product and processes. There's no compromise on analysis, size, anneal, etc.

Advantages of buying from Ohio Seamless multiply, the closer you examine them. Our single-source service eliminates headaches of interplant shipments . . . possible errors . . . multiple purchase orders and invoices. Ohio Seamless keeps your production lines humming because you get *precisely what you want.*

For proof, contact our nearest sales office or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-7138



SALES OFFICES: BIRMINGHAM • CHARLOTTE • CHICAGO (Oak Park) CLEVELAND • DAYTON • DENVER • DETROIT (Ferndale) • HOUSTON LOS ANGELES (Lynwood) • MOLINE • NEW YORK • NORTH KANSAS CITY PHILADELPHIA (Wynnewood) • PITTSBURGH • RICHMOND • ROCHESTER ST. LOUIS • ST. PAUL • ST. PETERSBURG • SALT LAKE CITY • SEATTLE TULSA • WICHITA

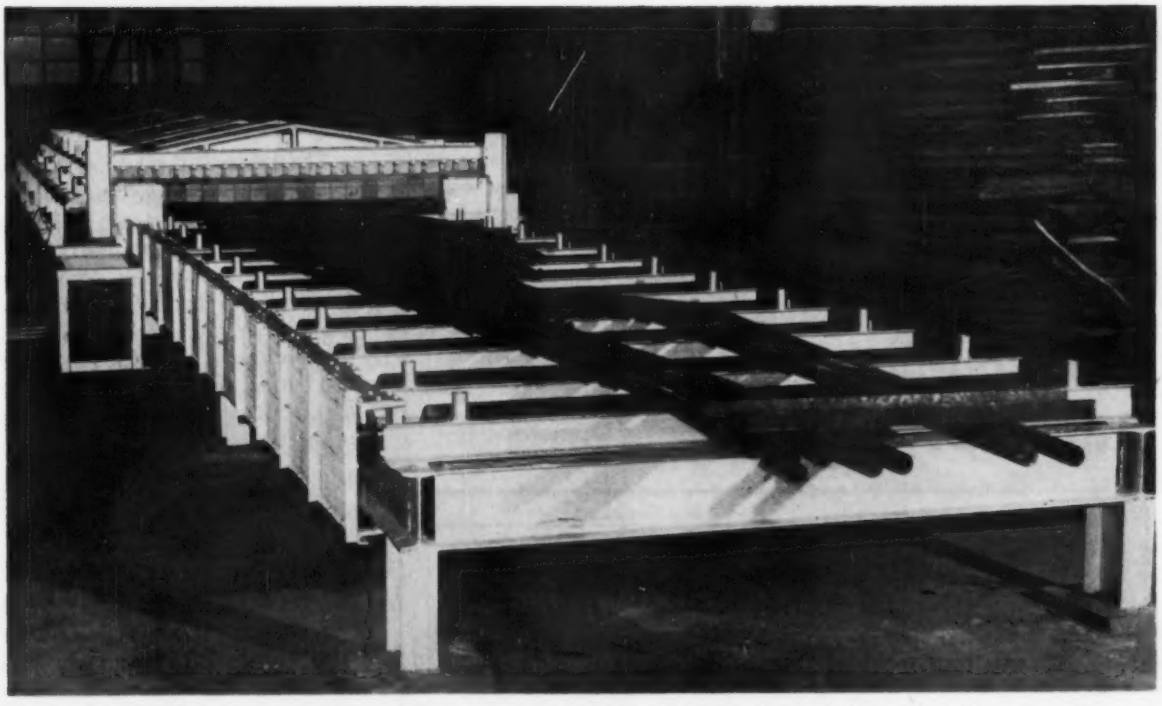
CANADA: RAILWAY & POWER ENGR. CORP., LTD.

EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY
225 Broadway, New York 7, New York

FIFTY YEARS
OSTUCO
OSTUCO TUBING
1908 1958

OHIO SEAMLESS TUBE DIVISION
of Copperweld Steel Company SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging



IN PRODUCTION: New luminous-wall furnace saves fuel in solution treating stainless steel tubing assemblies.

Luminous-Wall Firing: Low-Cost Idea in Rapid Heating

Laboratory tests—plus production experience—prove that luminous-wall firing is practical and cuts fuel costs by as much as 60 pct.

That's why its story is important to the metalworking industy. Here's a new approach to furnace heating.

By P. M. Unterweiser
Metallurgical Editor

▪ Luminous-wall firing, a new concept for heating furnace loads quickly and efficiently, is as simple as it is basic. The luminous wall is made of porous refractory through which a natural gas-air mixture is passed under controlled pressure and burned.

Getting down to dollars and cents, the idea has a number of strictly practical virtues. Its efficiency is such that it can cut fuel costs by as much as 60 pct. It heats very quickly, so quickly that its rate approaches instantaneous heating. It cools rapidly without refractory spalling. Not limited to a particular temperature range, it can operate at temperature levels up to 2300°F.

It's Commercial—A major contribution to furnace design, the luminous wall technique was developed by The A. F. Holden Co., Detroit. Proof of its commercial feasibility and operating performance have been demonstrated in a production-size furnace recently installed at the Chattanooga plant of Combustion Engineering, Inc. Not to be classed as a laboratory curiosity, this furnace has a hearth that is 30 ft long.

At Combustion Engineering, the new furnace is used to solution treat stainless steel tubing up to 20 ft long. Normal operating temperature range is 2050-2150°F. Solution treating improves fabricating properties of the material and, by uniformly enlarging the grain structure, increases creep strength. The

tubes are finally assembled in panels to serve as reheaters and superheaters for high-pressure, high-temperature steam generators.

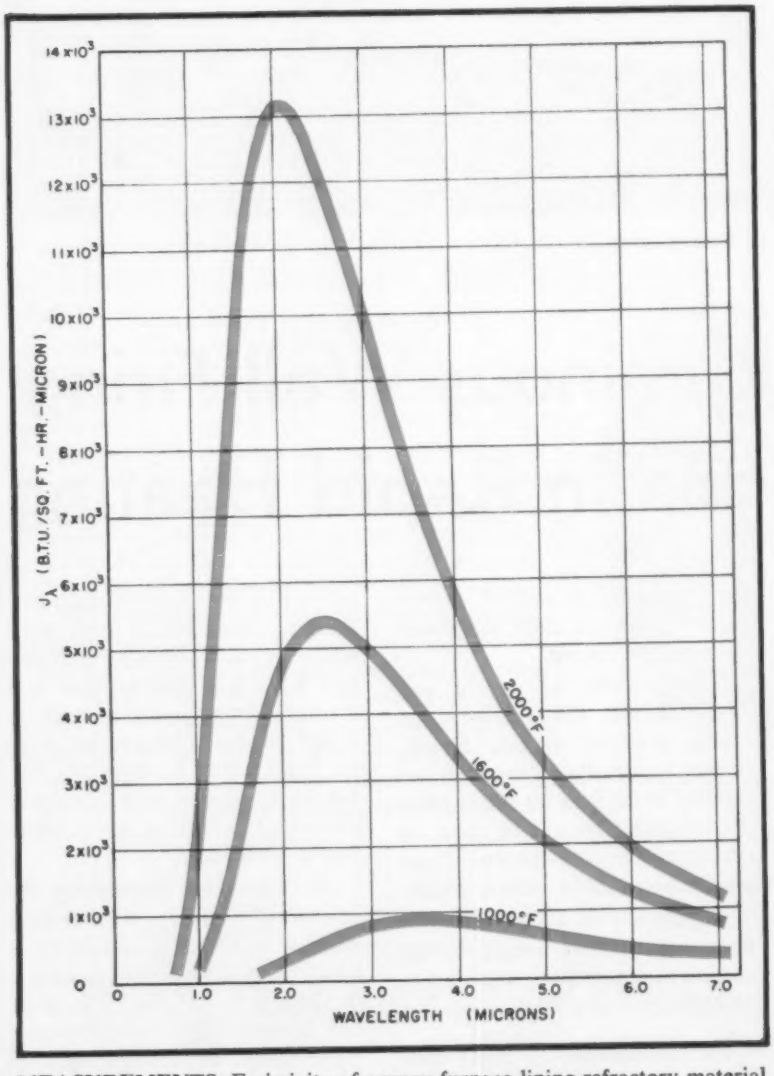
Heats Tubing—A single furnace load will usually consist of about a ton of tubing (Type 321 or 316). Placed on a roller conveyor, the tubes are fed directly into the furnace at 1600°F. In 19 minutes, load temperature is brought up to 2050°F. For optimum results, it is held at this level for about 20 minutes.

Throughout the heating cycle, the tubes are supported on sturdy rollers that maintain a slow, oscillating motion. Although the rollers are water-cooled, the constant back-and-forth motion helps to keep them straight and extends their life at elevated temperature. It also contributes to tube temperature uniformity.

Luminous Wall—At the end of the heating cycle, the furnace rollers speedily convey the tubes through the flame-curtained furnace entrance. Outside the furnace, the tubes are supported (and kept straight) on a roller conveyor until they cool.

The heart of the heating system is the luminous wall. In this particular furnace, it extends along the entire length and breadth of the hearth. It consists of a porous refractory brick that is fed from below with a natural gas-air mixture. Gas pressure is carefully controlled and burning occurs at the surface of the refractory only. Heat storage in the brick is held to a minimum.

Emission Spectra of Porous Refractory Lining



MEASUREMENTS: Emissivity of porous furnace-lining refractory material checks out at about 0.7 for temperature range of 1600-2000°F.

Saves Fuel—According to Harry N. Morgan of Combustion Engineering's staff, luminous-wall heating has cut fuel costs by a little more than 60 pct. The figure is based on a comparison of present fuel costs with those obtained on a conventional car-bottom furnace previously used for the same job. This adds up to an impressive saving—especially in an area where natural gas is relatively expensive.

Uses Air—During the heating cycle, Combustion Engineering alternates the flow of the gas-air mixture with a flow of air alone. This provides a convenient means for leveling off at, and maintaining, a desired temperature. Temperature control is automatically regulated by an elaborate series of thermocouples distributed throughout all sections of the furnace.

Although the luminous-wall principle is a new and different approach to industrial heating, it is backed by considerable research and testing. A good deal of this work was carried out at the University of Michigan Research Institute, Ann Arbor. The Institute issued a complete technical report on the heating mechanism earlier this year.

How It Works—The report notes that "one of the important characteristics of this furnace is the rapid heating and cooling cycle

which is possible." For example, a solid 2-in. diam iron bar 6 in. long can be heated from 80° to 2000°F in less than 20 minutes. Of equal significance, it can be cooled back down to 1000°F in 16 minutes while in the furnace.

What is the mechanism of this unusually rapid heat transfer? Can it be explained in terms of convection, conduction, or radiation—separately or in combination?

Several tests were conducted to clarify this important point. In one, a series of comparative temperature measurements were made. Both a control thermocouple and a Radiamatic temperature measuring unit were used. The Radiamatic unit, shown in the accompanying diagram, is an infrared-sensitive device. It was placed in position to view the furnace wall area shown.

Key Tests—For the first experiment, "the control thermocouple was placed very close to the wall in the area viewed by the Radiamatic unit, and the furnace was fired to 2000°F. The experiment was repeated twice, first with the control thermocouple moved out 8 in. from the wall, and then 10.5 in., but always directly opposite the spot viewed by the Radiamatic unit." The resulting temperatures are shown in the table.

The results show a close agreement between radiamatic measurements and those made by the control thermocouple. Essentially, this means that all heating of objects in the furnace is by radiation.

Mostly Radiation—Were either convection or conduction an important factor, the Radiamatic unit would have recorded a lower temperature. This result can be anticipated because the unit is sensitive to radiant energy only.

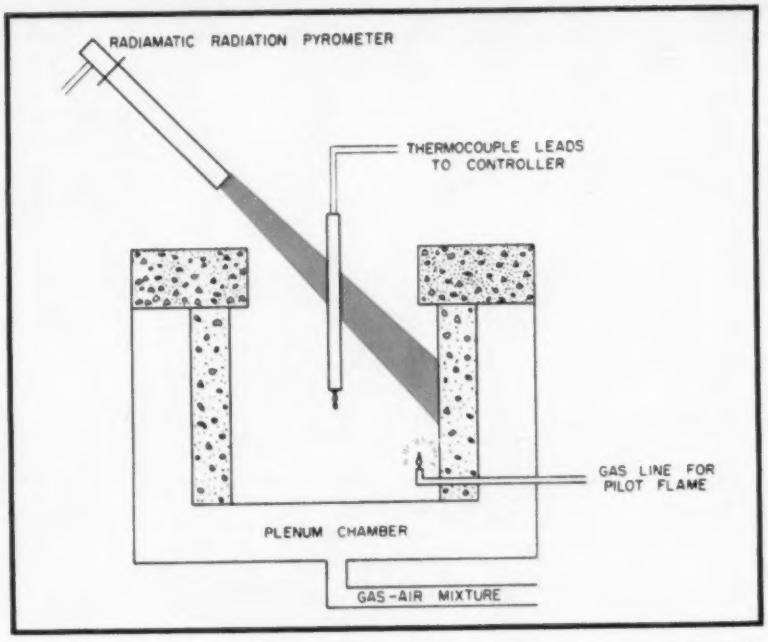
According to the report, "the fact that the control thermocouple indicated the lower temperature at 8 in. and 10.5 in. from the wall is probably due to its 'seeing' the unheated bottom of the furnace in addition to the walls, and consequently responding to an integrated or average temperature." (The test furnace, unlike the production installation, was heated from the side walls.)

Three Main Factors—It was also determined that the porous lining through which the gas-air mixture passes is a poor heat conductor. Only the face of the brick is appreciably heated by the gas flame. The gaseous mixture passing through the brick actually cools all sections except the heated surface. The brick has little chance to retain heat.

Thus three key factors explain the rapid heating and cooling cycle. First, there is the factor of closeness between the gas flame and the brick's surface. Secondly, there is the high emissivity of the brick lining. And last, there is the low conductivity of the brick.

The combination provides a degree of heating efficiency that is bound to meet with wide acceptance. It isn't a cure-all, but it unfolds many possibilities that heat treaters will want to explore.

How New Principle Works

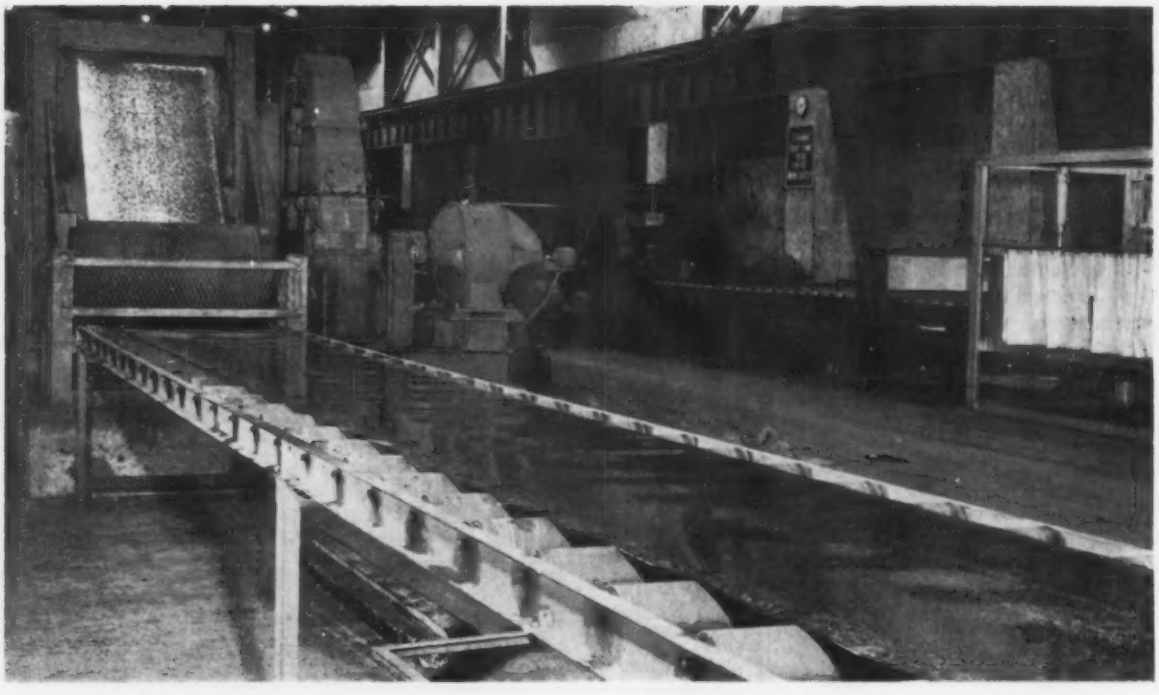


PRESSURE: Gas-air mixture, under controlled pressure, is forced through porous brick and burns evenly at wall's surface.

Thermocouple vs Radiamatic Measurements

	Control Thermocouple	Radiamatic Unit
Control Thermocouple at wall	2000°F	2000°F
Control Thermocouple 8 ins. from wall	2000	2020
Control Thermocouple 10.5 ins. from wall	2000	2070

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



HEADED FOR LEVELING: Galvanized sheet showing stresses and distortion is on its way to roller leveling.

Roller Leveler Adds Precision To Mill Production

When it comes to ridding sheets of distortion, here's a roller leveler that not only does a quality job, but does it at a high rate of production.

▪ A new notion of flatness for steel sheets may be taking hold. Major mills are devoting more attention to the job of leveling. It's in response to a growing demand for improved flatness.

Weirton Steel Co., Weirton, W. Va., is putting most of its galvanized sheet through roller levelers made by Voss Engineering Co., Pittsburgh. The same works is using the levelers for all cold-rolled sheet in cut lengths.

Stress Quality—While the unit is more complex than many roller levelers, it smooths sheet to stretcher-leveler flatness. The unit corrects high degrees of distortion.

Both steel and aluminum mills have used the Voss leveler for some years. But it has been on a spot basis to reclaim mis-shapen sheet and to meet special requirements.

Two years ago, Weirton put Voss units to work in regular production. The firm installed seven levelers in the galvanizing shop. One leveler was placed on each of two shear lines in the cold mill.

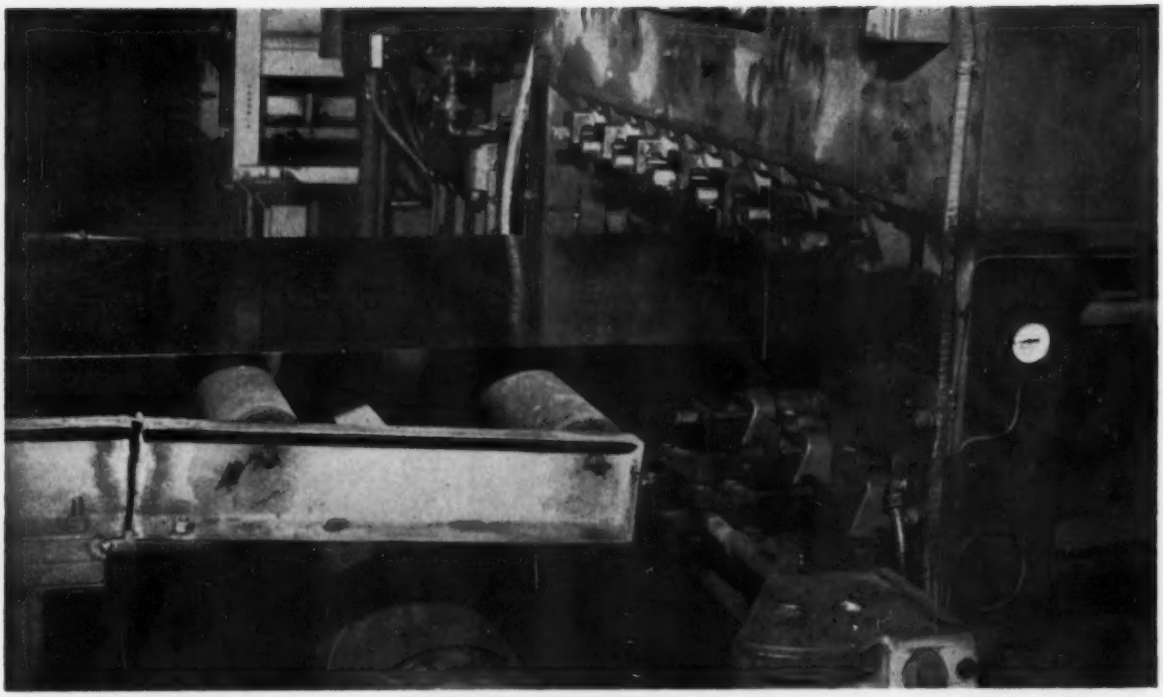
Mount in Tandem—Two of the four galvanizing lines are equipped for roller leveling either cut sheets or coils. On each of these lines, two roller levelers are mounted in tandem.

Coil stock goes to a coiler after passing through the first leveler. Sheets, sheared after the first leveling, then go directly to the second leveler.

Operators see several benefits in the new applications. For one thing, the levelers permit correction of extreme distortion at low cost. One cold mill estimates the units reduce re-rolling time 25 pct.

Check Performance—Then there is the question of overall quality. At one installation, it's estimated that sheets from 85 pct of a cold-rolled coil can be smoothed to stretcher-leveler flatness.

The leveler is claimed to produce panel flatness on thin sheet that is up to 70 pct tight to start with. It



QUALITY FLATNESS: Galvanized sheet emerges from leveler with stresses removed and a high degree of flatness.

will give stretcher-level quality to thin sheet that is well within commercial flatness tolerances.

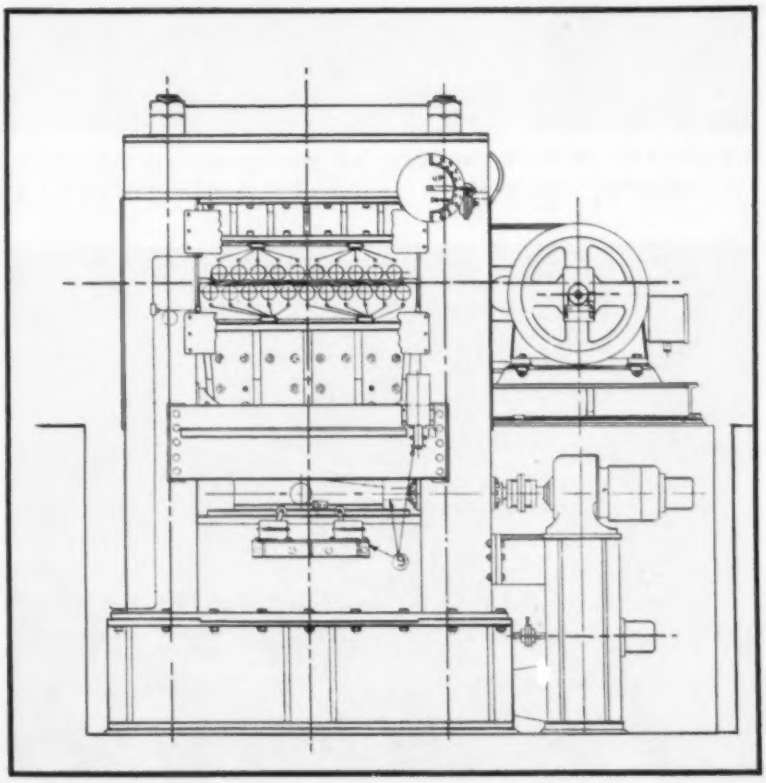
Performance is even better on thicker sheets. On galvanized sheets, the roller leveler has the added advantage of promoting non-fluting qualities.

Key in Work Rolls—The Voss unit uses work rolls of 1-5/32 in. diam for leveling mild steel ranging from 0.018 to 0.076 in. thick. The advantage of using small rolls is that they bend the metal beyond its yield point to effectively relieve stress.

A second advantage is that the unit uses small bearings as backup rolls. These work independently, enabling the unit to adjust itself to the different conditions of distortion.

A third factor, say Voss officials, has been the durability of the unit. Recent applications have shown that the small work rolls stand up under heavy production.

The unit provides an answer to competitive pressure for higher quality.



ROLLS MAKE DIFFERENCE: Work rolls of 1-5/32 in. diam level sheet 0.018-0.076 in. thick. Backup rolls (not shown) provide adjustment.

Two-in-One Pass Ups Bar Yield

What's the secret to boosting production of a rolling mill?

Doubling up in just one phase does the job for one mill.

The last five stands do double duty with output up 60 pct.

▪ Small changes to an established method can often result in major benefits. For a rolling bar mill, a procedure, called double gating, has upped production 60 pct.

The method takes advantage of processing two bars at once in the last five stands of the operation. Output of ½- and ⅝-in. reinforcing bars has risen from 240 to 400 tons per 16 hours.

METHOD IN ACTION: Reinforcing bar gets repeated into mill. Passing two bars through together in last five stands speeds production.

COOLING PLATFORM: Sheared lengths of rod pass to wide cooling platform with indexing units called "lily pads." Final shear completes job.

Important Steps—In putting double gating into practice, the firm, Oregon Steel Mills, Portland, Ore., takes conventional steps in preparing ingots. In fact, all the rolling mill steps such as rolling the ingots after a reheat are normal.

It's in the stranding that the change occurs. Here the bar is mechanically and manually repeated. It goes through five stands of a 14-in. rolling mill and two passes of a 9-in. mill.

In the last five stands of the operation, two bars pass through simultaneously. After processing through the last stand, the leading bar enters a flying shear through a 4-in. diam tube.

Fast-Acting Shear — Measuring with an electric eye, the flying shear cuts the bars to hot-bed length. Shearing takes place with the bar traveling from the mill at 2400 fpm.

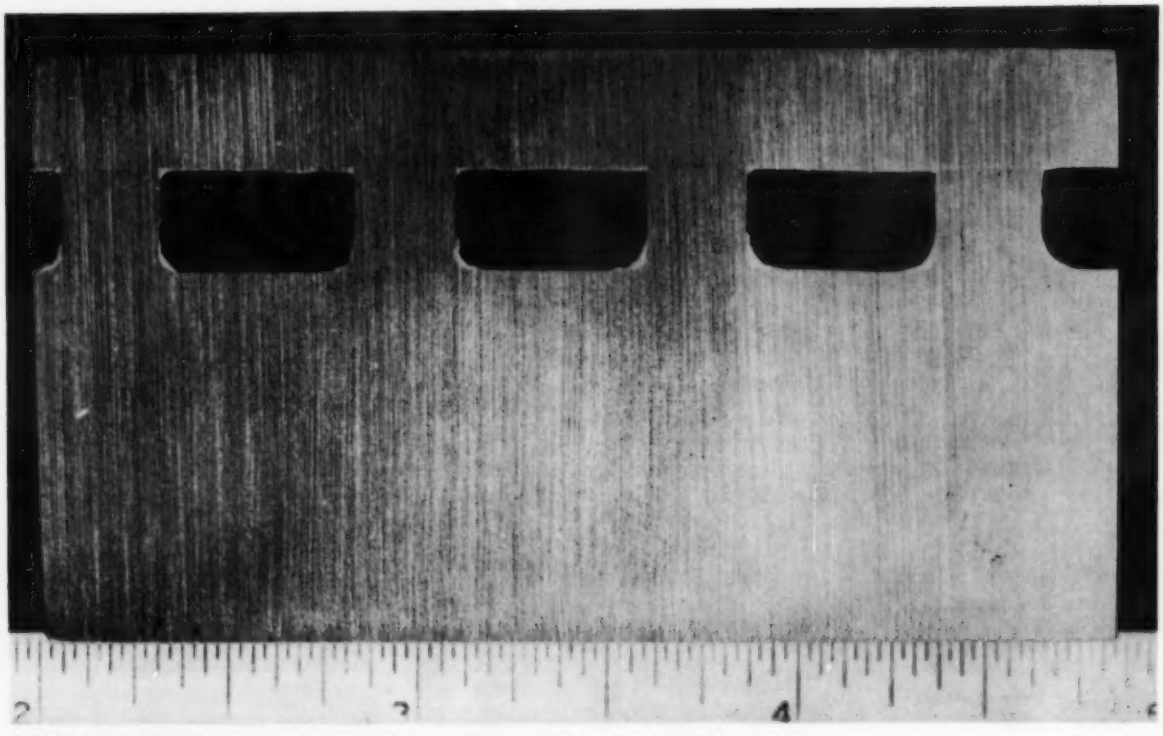
Because of double gating, two bars pass through the flying shear with an overlap of about one-half. After shearing, the halves of the first bar go first to one side, then to the other side of a hot bed.

While the second half is half way to the end of the hot bed, but still in the shear, the second bar starts through the shear to be cut in two and likewise to proceed to respective sides of the hot bed.

The bars go to a wide platform of "lily pads" for cooling and final shearing. Finished bars are strapped into bundles.

Record Data — An identifying shipping tag lists customer's order number, the grade, cross-section, length, number of pieces, heat number and weight. As each bar is counted, it's chalked across the cut end to insure accuracy.

An overhead crane then lifts the bundles onto flatcars for shipment to customers.



SPACE SAVERS: Built-in heat transfer channels aid efficiency. They're well clad to resist corrosion in service use.

Find New Uses for Heavy Plate With Built-In Clad Channels

Are you concerned with heat transfer problems?

Maybe a heavy structural plate with built-in, corrosion-resistant channels is what you are looking for.

Here are facts on one such product that's fast finding new uses.

▪ There's been lively interest in the structural plate forms with integral, vacuum-clad heat-transfer channels announced earlier this year by Chicago Bridge & Iron Co.

Known collectively as Channeled Hortonclad, various forms have already been used for press platens, reaction vessels, and chill plates.

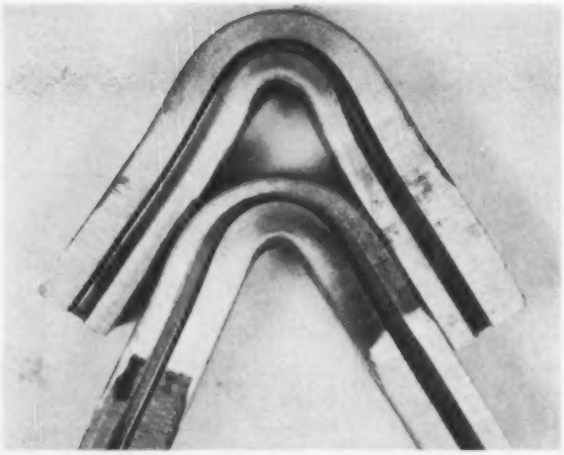
To fit these needs—and others being proposed—plates have been made in many combinations of base material, clad layer, and patterns and cross sections of channeling. As a result, more facts are available to help potential users evaluate these products.

Mill, Then Clad—The channeled forms are made by first milling labyrinthine grooves in a heavy base plate—usually steel. A cladding layer of a suitable metal or alloy is then vacuum bonded to the base plate with copper. This forms coil-like passageways within the finished product, and at specified distances from both plate surfaces.

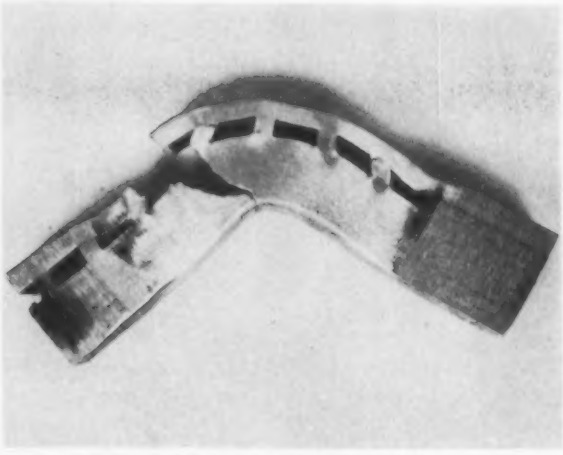
Thus far all channels have been milled. But there's no reason why they could not be otherwise cut, rolled or formed, so long as the lands between the channels are clean and flat within 0.008 in. Within this tolerance limit, photomicrographs show that bonding is full, clean and continuous—at least as strong as the bonding material itself.

Dozens of successful cladding and base plate combinations make it appear that all the cladding materials available in solid vacuum-clad construction can also be used for channeled plate.

Impressive Variety—A list of these products includes austenitic stainless steels such as 304L, 316L, 321, 347, 318 and 17-7PH; straight chromium grades such as 403, 405, 410 and 430; other materials such



TAKE SHARP BENDS: Stainless-clad channels resist compressive stress (top) and tensile stress (bottom).



NO DIFFERENCE: Cladding bonds are strong; severe transverse bends are just as apt to rupture base metal.

as nickel, Monel, Inconel, and Hastelloys B, C, and F; also silver, copper, brass, and others.

Titanium, zirconium, tantalum, and bronze have been clad in channeled form under laboratory conditions. Results indicate they can be applied on a production basis when and if the need arises.

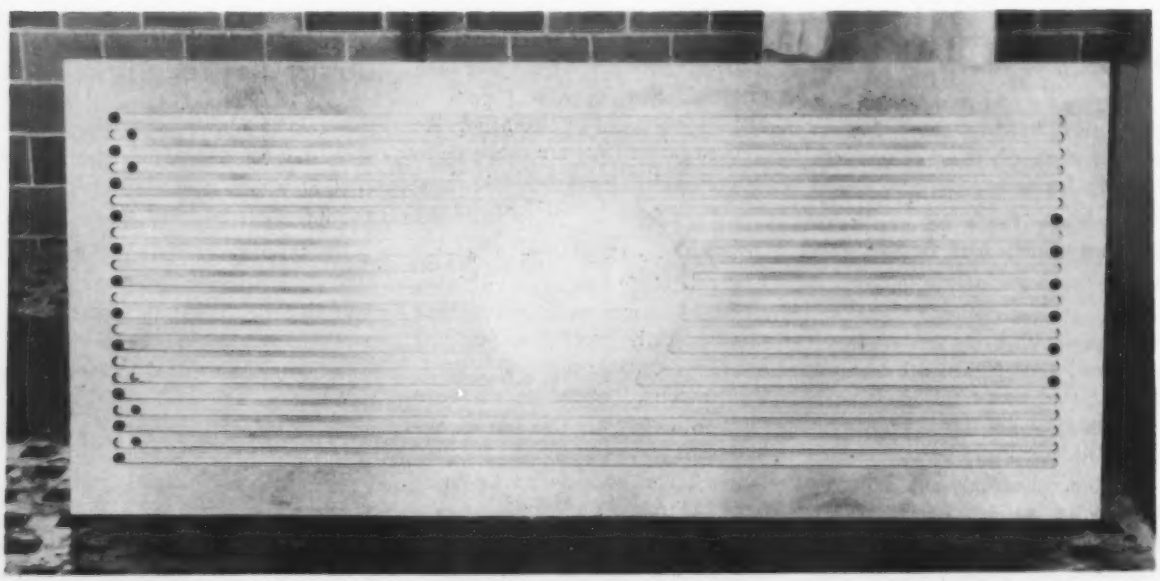
Satisfactory channel depth on commercial jobs has ranged from ¼ in. to 1 in. thus far. Channel span under the cladding layers has ranged from ½ in. to 1½ in., depending on cladding thickness.

Fillets No Problem — Fillets formed by the bonding material at the corners of the channels are so small their effect on flow rate is insignificant. Thus theoretical flow and pressure drop calculations are reasonable. These fillets are actually desirable if there is any tendency for the coolant or heating medium to cause chemical or electrolytic corrosion.

The pressure drop test shown in the accompanying graph covers some 310 lineal inches of ¼-in. deep by ½-in. wide channel. It was formed in 7 parallel passes with 6 sharp "U" turns.

Although the graph's correlation with normal flow formulas is good, it would be difficult to use this curve for design purposes. Still, it shows that for good heat transfer, ample flow and linear velocity of coolant through the channels can be had at feasible pressures.

Parallel Flow Best—For maximum coolant flow at low pressure drops, channel networks are usually linked in a parallel instead of in series. This makes it simpler to pro-



ANY CONTOUR: Channels, shown before they're clad, may be machined to detour flow around plate openings.

vide a coolant inlet or outlet. It merely requires drilling through the base plate into a channel and tapping the hole with the usual pipe threads.

Pressure tests at 100 psi show up well on ¼ in. by ½ in. channels in plates of stainless bonded to mild steel. Tests of each channel failed to show any defect in bonding even after the plate was reverse-bent to a 12-ft radius. These bends simuated the maximum strain put on the bond during roller leveling.

To further demonstrate the formability of channeled plate, test specimens were bent sharply until they failed. This showed that ribs sheared just as often through the steel of the base plate as they did through the vacuum brazed bond. Pressure of 3000 psi was required to develop a leak in one of the plates.

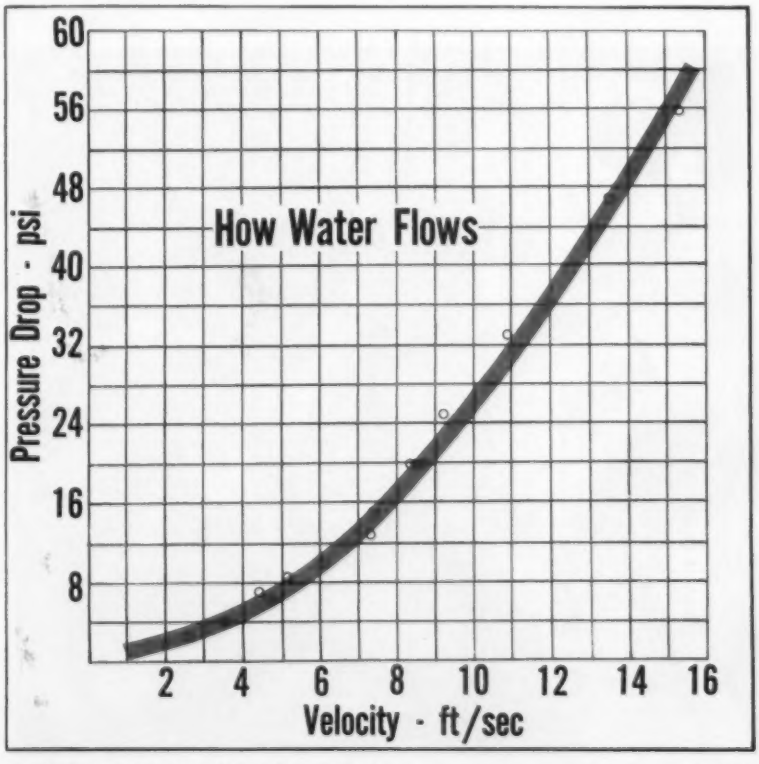
Roll, Weld Easily—Such tests of mechanical properties show that Channeled Hortonclad can be rolled and welded normally. Welding zones are not channeled, thus welding procedures are the same as those used with any clad material. Rolling can be done to the radii normally used in corrosion-resistant heat-transfer vessels.

The channel patterns can also be arranged to carry coolant or heating media around machined-out areas in the plate sections. In one case, this was done to bypass an 8-in. circular observation port. Because all plates are custom channeled, there is no need to intersect the passages with any cutting, welding, or machining. Custom design means a minimum of fabrication.

Looking Ahead—All plates channeled thus far have been used either as flat sections or as sections rolled for cylindrical vessels. Dishing is a possibility, however.

Aside from the uses mentioned previously, speculative applications for channeled plate include mill machinery, engine blocks, and mechanical structures where thermal expansion and contraction must be controlled. Another potential use is in vacuum furnace construction.

FILLET HELPS: Small copper fillet at corner of channel doesn't obstruct flow, does help resist chemical or electrolytic corrosion.



PRESSURE-DROP CURVE: This test measured water flow through 310 lineal in. of channel ¼ in. deep by ½ in. wide. Channels were in seven parallel sections with six sharp "U" turns connecting them.

Plasma Arc Torch Ushers In New Fabricating, Coating Methods

Radically new methods for fabricating shapes and applying metallic and non-metallic coatings take their cue from the plasma arc torch.

It's a natural for coating with refractory metals, shows promise of a strong industrial potential.

▪ Thanks to the development of the plasma arc torch, a brand new method for fabricating shapes and applying ultra - high - temperature coatings is now a production reality. The process permits working with controlled temperatures up to 30,000°F. It can be used to apply pure tungsten or tungsten-coated graphite —coatings that will withstand temperatures above 5000°F.

A highly spectacular contribution to metalworking, the new process was developed by Linde Co., Div. of Union Carbide Corp., New York. Because it can handle the highest temperatures ever harnessed for industrial use, it clears the way for extra-hard materials that were almost impossible to machine or form by conventional methods.

Small Device — Simple enough to be used in the average shop, the plasma arc torch is a small device with a diameter of less than 2 in. It houses and controls the plasma jet —a stream of intensely hot, ionized gas. The jet is formed by passing any gas or vapor through an arc.

Here's how the torch works. The metal or substance to be worked is prepared in wire or powder form. It is then passed through an intense arc that is struck inside the torch. At this point, temperatures above 15,000°F are reached.

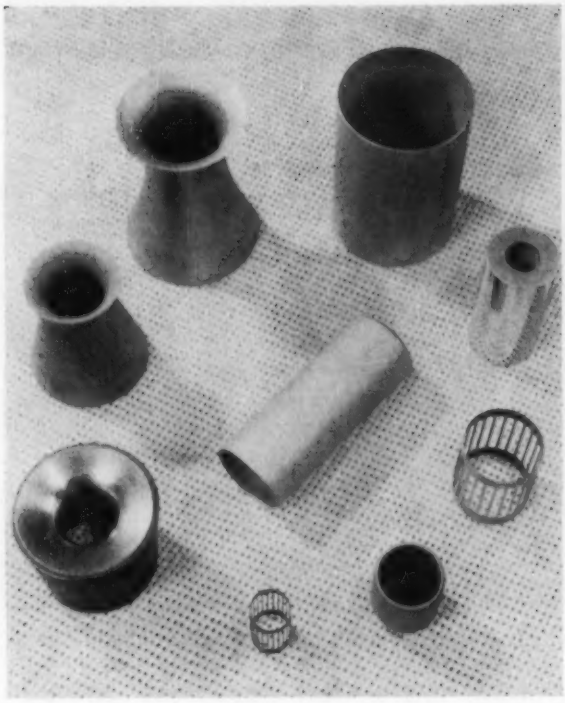
Firm Bonds — The high heat of the arc converts the material passing through into a fluid or plastic state. The molten material is carried out of the torch by inert gases moving at high velocity. Finally, it is deposited on the part being made or plated with enough force to insure a firm bond.

A separate torch has been designed for use with either wire or powder. Use of one or the other depends largely on convenience or economics. If a job calls for the use of stainless steel, for example, this is more readily available in wire form. On the other hand, tungsten and carbide materials are almost always used in powder form.

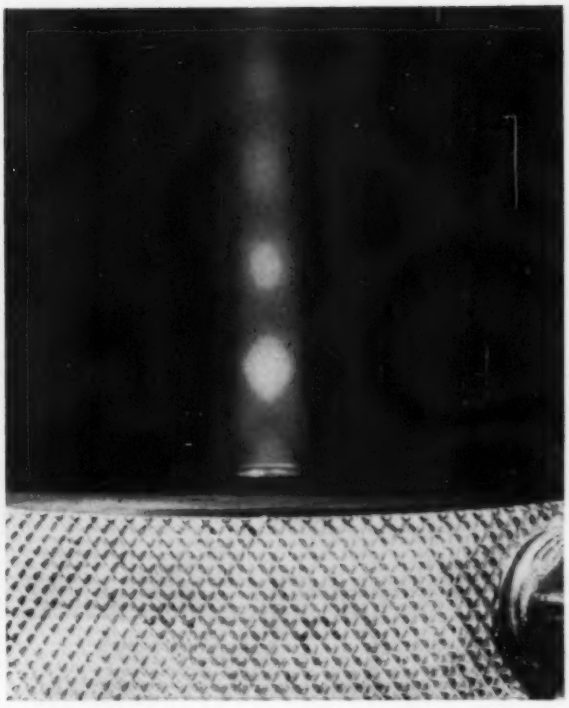
If torch temperatures are so very high, how can the nozzle material of the torch withstand the heat? According to Linde Co.'s R. M. Gage, inventor of the process. It doesn't. In a properly designed torch, the arc column doesn't touch the nozzle. The nozzle wall is cold relative to the arc.

Keeps Cool—"Surrounding the arc column proper and adjacent to the nozzle wall is an annular layer of cooler gas having a very steep radial temperature gradient. At low gas flows through the nozzle, the cool layer results from the radial flow of heat to the nozzle. At higher gas flows, much of this radially flowing heat is swept out by the flow of gas before reaching the nozzle wall."

COATS CONE: New plasma arc torch coats a missile nose cone with heat-resistant tungsten. Harnessing the highest temperatures ever used in industry (15,000-30,000°F), the process is also used to fabricate shapes.



VARIETY: Here are some of the parts being produced with the new plasma arc torch. At bottom, left, is a rocket nozzle made of graphite and coated with pure tungsten. The melting point of tungsten is over 6000°F.



SHOCK WAVES: Both a research and production tool, the plasma arc torch can be mounted as a wind tunnel aid. It produces hot gases with tremendous velocity—enough to form shock waves visible to the naked eye.

Coatings produced by the new process differ in appearance and quality from conventional coatings. They form an excellent bond with almost any base material—re-inforced plastics, metals, graphites, and carbons. Generally chemical and mechanical, the bonds obtained are actually firmer than those produced by plating, vapor deposit, or metal spray. Laminar in structure, the coatings are dense and can be polished to a very high finish.

Boon to Missiles—Although such coatings are bound to find applications in almost every industrial field, their immediate importance to aircraft and missiles is fairly obvious. High temperatures resulting from the use of solid propellants in rocket engines have placed a heavy strain on the design of nozzles and jet vanes. Flame temperatures up to 5500°F must be coped with. Exhaust velocities and chemical corrosion add to the complexity of the problem.

The new coating process offers a couple of relatively simple solutions. First, it permits the design of coatings on suitable grades of graphite. Also, it provides the basis for producing plasma-arc-formed shapes. A variety of refractory materials can be used for both coatings and shapes.

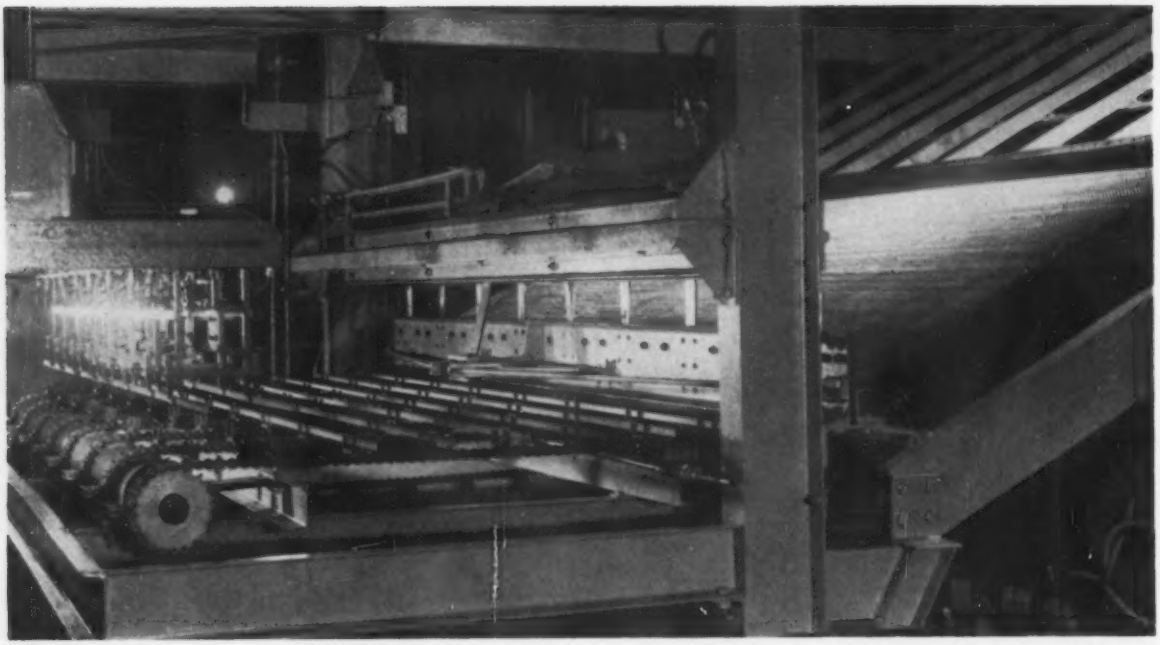
New Approach—The forming of special shapes is a radically new by-product of the process. To make a high-temperature nozzle out of tungsten, for example, the required thickness of the metal is deposited over a precisely made brass mandrel. The deposited metal has a density of 94-95 pct.

To remove the mandrel, the brass is dissolved in an acid bath. Only the hollow, tungsten nozzle remains. This shape is then fired in an inert atmosphere for 2 hours at about 2550°F. Firing serves to increase both the density and rupture strength of the material. Shrinkage is negligible.

A special feature of the plasma arc torch is its unusual power concentration. If 50 kw are delivered through a ⅛-in. diam, nozzle, a power concentration of 3 megawatts/sq in. results. Although nitrogen, hydrogen, and argon are normally used, air can also be used with special shielding of the tungsten.

Multi-layers, Too—The part or mandrel to be coated is placed in a chuck and rotated. The torch applies the selected material and moves back and forth over the length of the part. It maintains a 90° angle to the surface being coated.

At present, Linde does not plan to market plasma arc torch equipment. It will accept orders for either parts coating or parts fabrication on an experimental or production basis. Such parts can be made or coated with a single layer. Or—to meet special needs—multi-layer coatings can also be produced.



SIMPLE FEEDER: Notched bars feed from chute (right) to conveyor. Fingers pick them up for initial forming.

Automatic Machine Forms And Welds Non-Skid Grating

Want to eliminate costly manual welding and boost product quality at the same time?

Here's a new machine that might give you some ideas.

▪ If your business volume justifies it, almost any hand fabrication job can be done better and more economically on a machine.

Take honeycomb-type safety gratings—the kind industry uses for plant floors, elevated platforms, and stair treads. For years, such grating was virtually handmade by Bustin Steel Products, Dover, N. J.

The firm's biggest and costliest problem was welding the wavy steel bars into the familiar diamond-mesh pattern. It took a corps of men to make arc tack welds wherever the wave crests of any two bars met. And to strengthen these joints, load-bearing ("side") bars also had to be hand welded into place at regular intervals.

Automation Has Answer — To cut the cost of this handwork, president Leo Bustin spent seven years designing and developing a fully automatic grate-making machine. Now finished, it turns out stronger grating at about 35 times the former production rate.

On one shift, with no more than an occasional once-over from a maintenance man, the new machine does the work of 24 hand welders. And because it resistance-welds the full height of the wavy bars wherever they make contact, these machine-made gratings need no side bars for extra strength.

Does Forming, Too—The machine is far more than just a welding unit, though. It's actually a complete grating - and grille - making plant in a space only 40 ft long, 22 ft wide, and 11 ft high.

It swallows steel bars at one end, then feeds them through forming and welding stations to deliver a carpet of finished grating at the other. It can turn out 5000 sq ft (20,000 lb) of grating per 8-hour shift.

Sharon Steel Corp. supplies hot-rolled steel bars of special, controlled analysis to feed the new machine. They're ⅛ in. thick and come in ½ to 1-in. widths. Bar length goes up to 10 ft, 6 in.

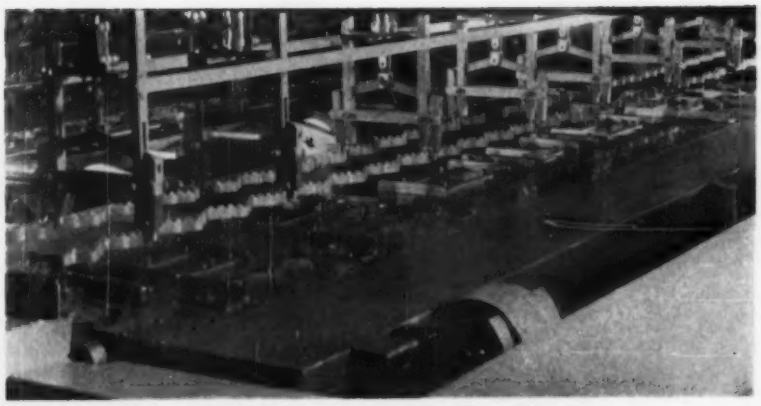
How They're Processed—Before they go to the grate-former, bars are descaled in a Pangborn Rotoblast unit. They're then fed to a

high-speed machine which puts a row of non-skid notches along one side of each bar.

Notched bars then go into a gravity feed chute at the end of the automatic machine. The chute holds about 1000 bars.

An air-actuated bar "peeler" pushes single bars into special receptacles on a conveyor chain. At a given point, mechanical fingers pick up a pair of bars from the chain and carry them to an "accumulator." Here they are preformed by dies that "gather" the metal, leaving it virtually stress-free. Another set of fingers carries preformed bars to the next station for final forming.

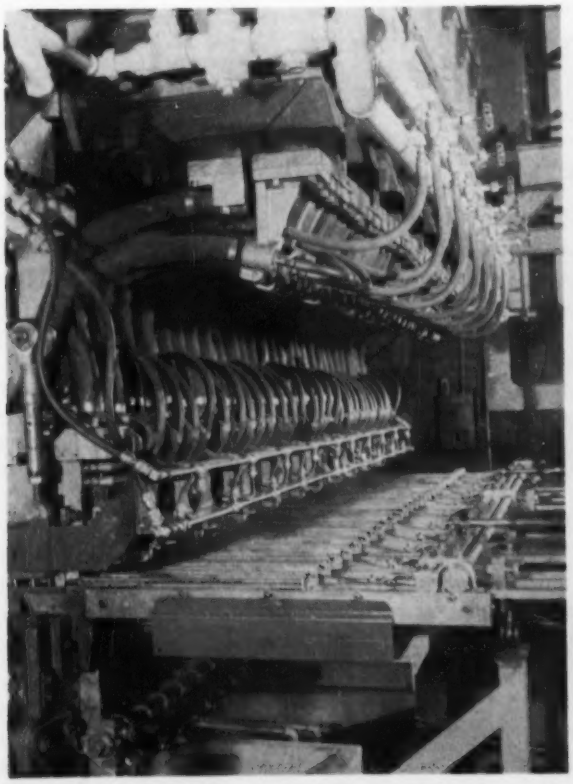
Pick a Pattern — At the final forming station, sets of dies give each pair of bars the required wave-like shape. These dies can be readily changed to create a variety of grating or reinforcement patterns for a range of uses.



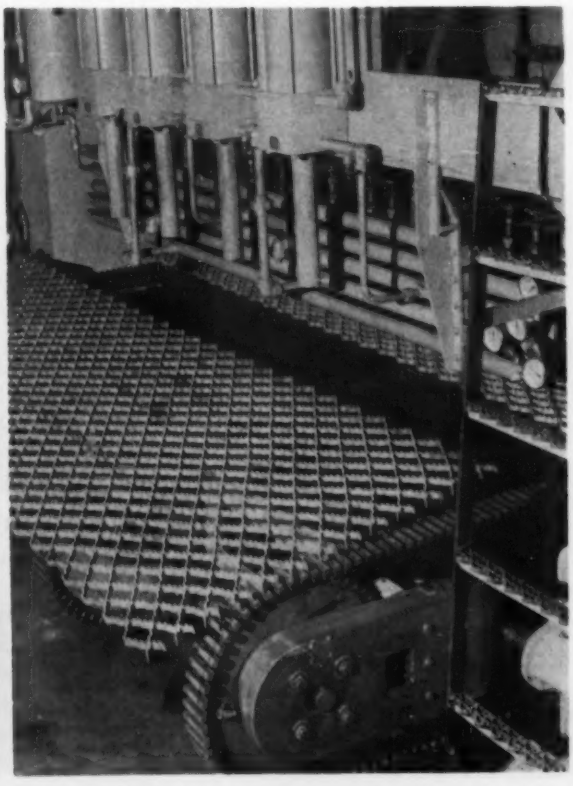
READY FOR WELDING: Fingers lift fully-formed grating bars to convey them to an index table which feeds the resistance welding station.

After final forming, other mechanical fingers carry the bars to an indexing table. This feeds them to 28 pairs of pincher-type, full-depth, resistance welding guns. Index pins work with table movement, shifting alternate bars so their wave crests match those of the bar just ahead. As quickly as the welding guns bond these contact points, another bar moves into place.

Theoretically, the machine could make grating in an endless track. In practice, however, preset timing devices interrupt welding-current flow to produce grating sections of any required length.

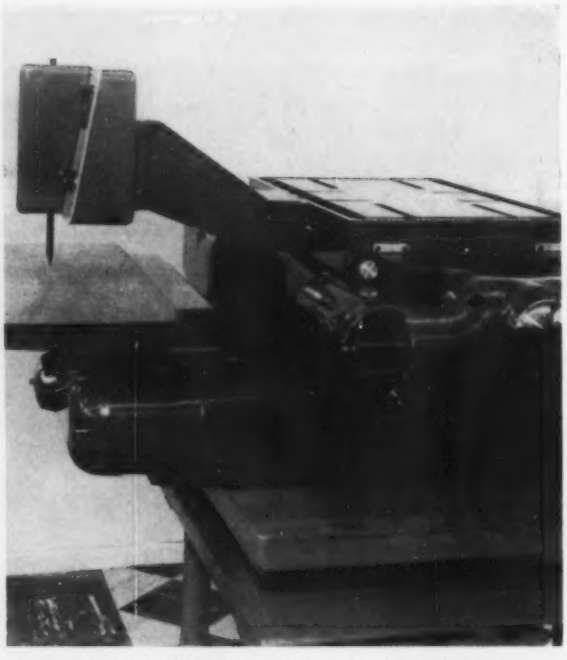


SYNCHRONIZED SETUP: Battery of timed guns makes strong, full depth welds wherever bars touch.



ALL DONE: Grating sections emerge from the automatic machine ready for galvanizing or painting.

TIME SAVER: Cummins-Chicago Corp. uses Micro-Path control to drill closely spaced hole patterns in 8 dies simultaneously. Workers used to do one at a time.



FOR CONTOURING: Table with built-in Pulservos will equip new and existing machines for continuous-path milling. Stylus programmer attaches easily.

Cost Drops for Tape Control

New System By-Passes Computers for Contour Machining

Here's news for almost any machine shop.

Accurate machining by tape control doesn't need a room full of electronic "brains."

■ The cost to equip your milling, drilling and boring machines with automatic tape control has just been marked down. You can now do it for somewhere between $15,000 and $25,000.

Credit for the price slash goes to a new magnetic-tape control system which skips the need for expensive computer programming and auxiliary equipment. This one records actual machine tool motion directly on an 11-channel tape. Play the tape back and it commands the machine to repeat each step exactly as recorded. Cost savings over manual production methods are said to range to 800 pct and more.

The name of this simplified guidance system is Micro-Path. It's a development of Micro-Path, Inc., a subsidiary of Topp Industries, Inc., Inglewood, Calif.

Two-In-One Unit—In one package, the new unit actually gives you two types of automatic control. Want to machine a complex continuous path, as in profile or contour milling? The tape will do it smoothly and accurately. With equal ease, it will direct point-to-point positioning for drilling, boring, etc.

To record a continuous-path program on tape, you use a stylus and a special recording head in place of the cutting tool. Slight hand pressure on the stylus will make it trace prints, layouts, sheet-metal templates or prototype parts. Stylus motion sends thousands of pulses per second through the electronic system. These pulses move the machine table and record the motion on tape the instant it happens.

There's no need to calculate cutter offset. Using a stylus end which is the same diameter as the milling cutter automatically compensates for this factor.

Point Control Easy—For point-to-point programming, you equip your machine with a special positional control for each of the two axes involved.

Each control has an accumulating

position reader and dial indicator.

To program a job, the operator sets the controlled slides to a zero reference point with the recorder "off." After switching to "record," the operator manipulates his controls until the required dimensions show up on the readers and dial indicators. Electronic pulses move each slide and are simultaneously recorded on the magnetic tape.

Once both slides are at the desired position, the operator can program on tape whatever machine functions are needed to finish the job at that point. He can also program a fail-safe check at any point to insure both slides being in the right coordinate position.

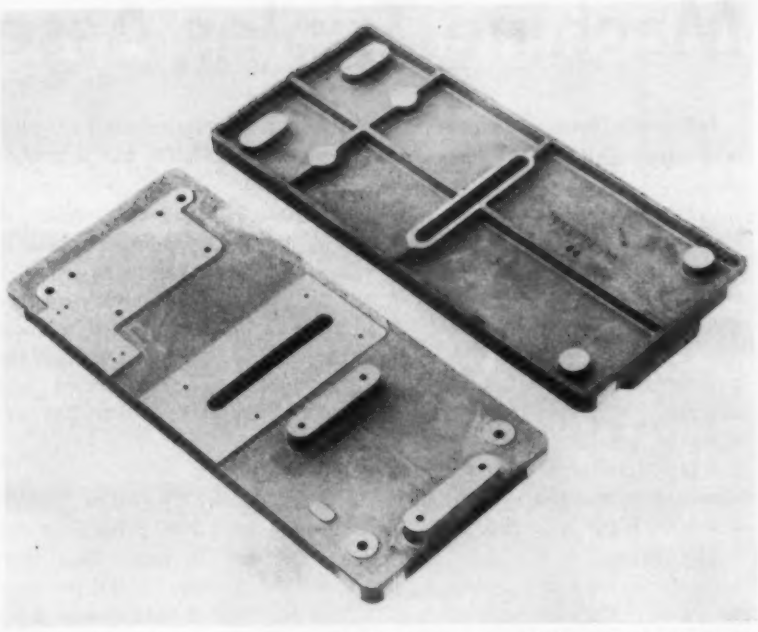
Same Pulses Play Back—When the tape is fully programmed it is ready for playback and actual machine control. To accomplish this, the same pulses which went into the tape now act as a direct control on unique servomotors, called Pulservos.

It takes one Pulservo for each machine motion to be controlled. The motor may be attached to the driven slide in any convenient way that will permit speed variation through belts or timing gears.

Adapts Readily—Modular design of all components simplifies the job of fitting new or existing machine tools with Micro-Path control. One new machine so equipped is shown in an accompanying photo. It's used by Cummins-Chicago Corp. to drill precisely-spaced holes in check-cancelling dies.

Two sets of four drill heads are mounted back to back above the machine table. Two Pulservos control longitudinal and transverse table motion within ± 0.001 in.

It formerly took a skilled worker 20 minutes to process one die. The tape controlled machine takes 30 minutes to drill the same hole pattern, but it turns out 8 dies at a time. It doesn't use expensive drill jigs, which means added savings. Moreover, the company has about 15 other parts it plans to make on the same machine.



QUICK WORK: Via tape control, this plate was milled on both sides and drilled in 23 minutes. Conventional methods took 1 hour.

POWER UNIT: Pulservo motor drives machine slide by converting impulses from magnetic tape (up to 6000 per second) to rotary motion.

Machine Triples Assembly Rate

Integrate two or more jobs into one unit, and unneeded steps disappear. Result: more pieces per hour.

By welding and shaping in a single setup, output jumps by three times.

▪ Teaming joining with forming in one unit lets a wire bolster maker triple its previous hourly production rate. Its new automatic welder-former turns out the wire products at a 5000 ft per hour clip.

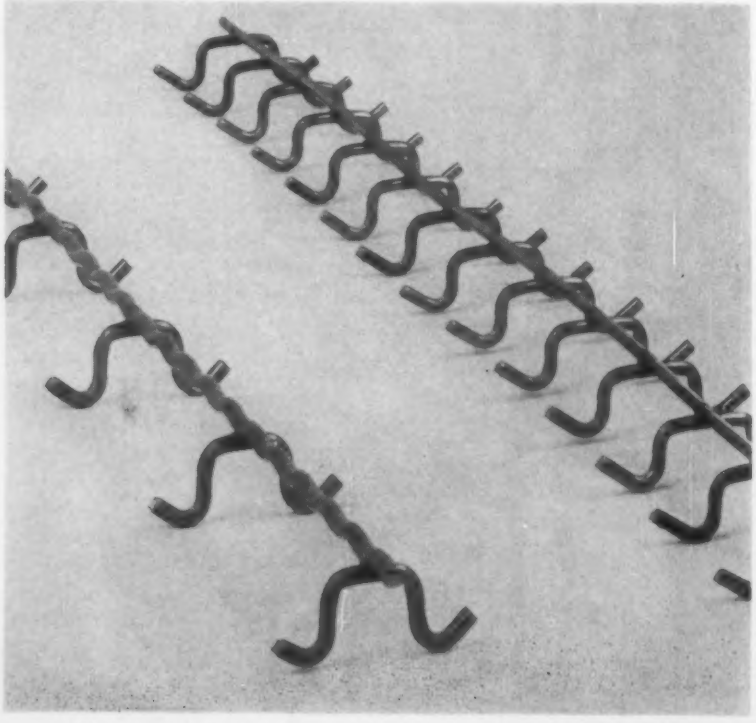
The bolsters, of No. 4, 5 and 7 wire stock, have use in construction work. They support reinforcing rods in concrete walls, floors, overheads, etc.

Make Two Kinds—The company makes two basic types: slab bolsters and beam bolsters. The first's top strand is corrugated on 1-in. pitch centers. The latter has a straight top strand.

Both kinds call for forming of wire legs and welding of these to top strands on various spacings of 2 to 5 in. Leg heights vary from ¾ to 3 in. The high-speed machine produces both. What's more, it can also turn out several sizes of "high chairs," similar to bolsters but with longer legs.

Rate Goes Up — The welder-forming unit's 5000 ft per hour slab bolster rate is more than three times the previous 1550 ft per hour. Not only this; it used to take a full 8-hour shift to make only 385 5-ft beam bolsters. Now the unit pushes 400 of these out every hour.

Weld strength and consistency have also improved, the firm reports.



WIRE BOLSTERS: Slab bolster (left) has a corrugated top strand; beam bolster's top strand is straight. Welding-stamping step simplifies assembly.

How It Does It—The two-in-one machine works like this: Adjustable feed corrugator wheels pull the top strand wire through a straightener. Corrugated wire feeds lengthwise into the welding station. Extra wide, the corrugator wheels can shift to give even wearing. Smooth wheels replace these to feed straight wire for beam bolsters.

A hitch-type feed pulls up to six wires through their own straighteners; it feeds them into the welding station at right angles to the top strand wire. This hitch feed fully adjusts for both feed length and spacing between wires.

Guns Move In—The welding station consists of six special precision pincher-type guns. These readily adjust for various leg spacings. Three 50-kva dual-secondary package type transformers fire them.

A shear is between the hitch feed and welding guns. This is timed to shear legs to length after the guns exert clamping pressure, but prior to weld current flow (to prevent shorting).

Press Forms Legs—After welding, parts go to a leg forming station. It consists of a four-post double crank press with dies which form the leg wires. An extension of the upper platen carries an alligator type shear. This cuts complete bolsters to desired length.

Finally, an air-operated run-out chute ejects the finished bolsters onto a bundling table.

All elements of the machine are driven and timed from a main crankshaft. This is coupled to a 5-hp motor and flywheel by a heavy duty air clutch and brake.

Anybody Can Do It—The machine's manufacturer, Precision Welder & Flexopress Corp., Cincinnati, points out that many manufacturers can profit from similar systems. Simply integrating welding and forming can pay off in considerably upped output.

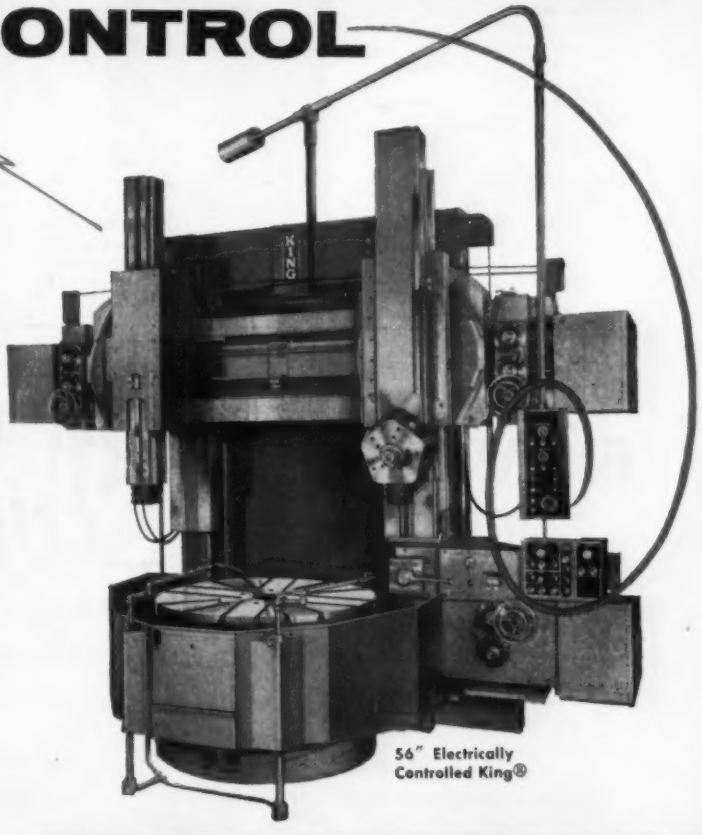
FULL ELECTRICAL CONTROL

...and other outstanding features for

FASTER, BETTER, LOWER COST Boring, Facing, and Turning

with the ALL-NEW

KING



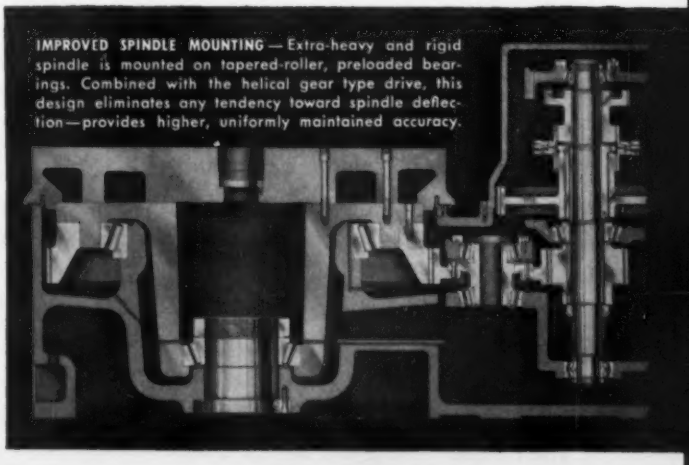
56" Electrically Controlled King®

Here is boring mill control manipulation cut to a bare minimum . . . all controls *electrical* . . . all controls literally at the operator's *fingertips!*

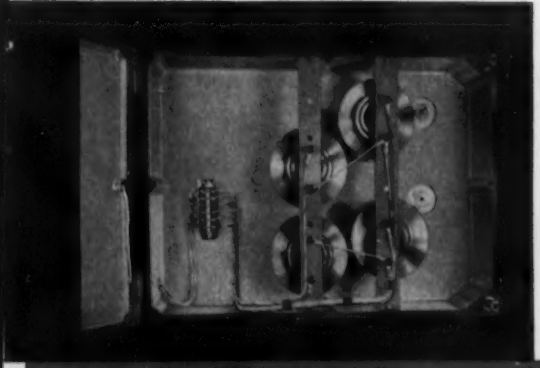
On these new KING® Vertical Boring & Turning Machines, direction of head movements is by simplified "up-down" and "in-out" switches; spindle speeds and feeds—both in expanded ranges—are pre-selective from direct-reading dials. The new KING is huskier and more powerful, too. Increased machine rigidity and higher horsepowers take *full advantage* of the capabilities of modern cutting tools.

The new KING will bring to your operation, as it is bringing to so many others, all-important competitive advantages in faster set-up . . . faster operation . . . higher, uniformly maintained accuracy . . . greatly increased productivity . . . *profit-making performance.*

For complete details see your authorized King Distributor, or write us direct.



IMPROVED SPINDLE MOUNTING—Extra-heavy and rigid spindle is mounted on tapered-roller, preloaded bearings. Combined with the helical gear type drive, this design eliminates any tendency toward spindle deflection—provides higher, uniformly maintained accuracy.

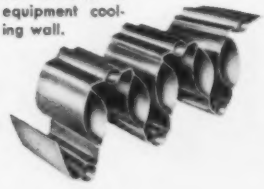


MAGNETIC-CLUTCH TRANSMISSION for feed rods. Pushbutton operated. Instantaneous engagement and disengagement of feeds assured. No periodic adjustment needed . . . clutches are easily removed for maintenance.

UNIT CONSTRUCTION OF DRIVE Extra-rugged housing provides increased rigidity for mounting of shafts. Heat-treated alloy gears, and shafts mounted in anti-friction bearings, used throughout. Drive removable as a unit for easy maintenance.

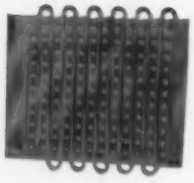
KING VERTICAL BORING & TURNING MACHINES

American Steel Foundries
KING MACHINE TOOL DIVISION
1150 Tennessee Avenue, Cincinnati 29, Ohio

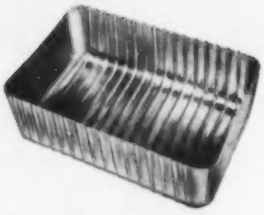


Section of Aluminum Tube-In-Strip combining refrigerant passages with air cooling for electronic equipment cooling wall.

Copper Tube-In-Strip used as a combustion chamber for water heater.



Copper Tube-In-Strip with return bends attached to produce a cooling plate.



This electronic cooling case of Revere Aluminum Tube-In-Strip was inflated after drawing.

REVERE *Tube-In-Strip* SCORES

NOW USED AS WATER-COOLED BUS BAR in manufacture of General Electric Semiconductor Rectifiers

HAS THESE 4 BIG MONEY-SAVING ADVANTAGES

1 Because it is a homogeneous mass Revere Tube-In-Strip eliminates the possibility of leaks.

2 User is able to obtain more efficient cooling.

3 If user finds it necessary to change cells it can be done without draining the system.

4 Revere Tube-In-Strip enables user to have a completely sealed system, thus eliminating O-rings or gaskets.

The use, by General Electric, of Revere Tube-In-Strip as water-cooled bus bar is still another of the myriads of ways this revolutionary product can be applied in industry.

The unique thing about Revere Tube-In-Strip is that it is a solid piece of metal, not two strips welded, brazed or bonded together. You buy strip, fabricate it as you wish, stamping, bending or forming it, and then as a final operation inflation expands the integral channels into tubes. Expanding in the open, the tubes are round; by expanding into dies, the tubes can be made rectangular, fluted, half-round, hexagonal, etc.

Revere Tube-In-Strip saves on first cost, and in fabrication. New and improved designs are made possible. The web between the tubes conducts heat faster. The vastly increased structural strength means you can use lighter gauges, saving in weight and price.

Revere Tube-In-Strip is available in Copper, Copper-base alloys and Aluminum alloys. The Revere Technical Advisory Service and the Research and Development Department will gladly collaborate with you in taking full advantage of this marvelous new material.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

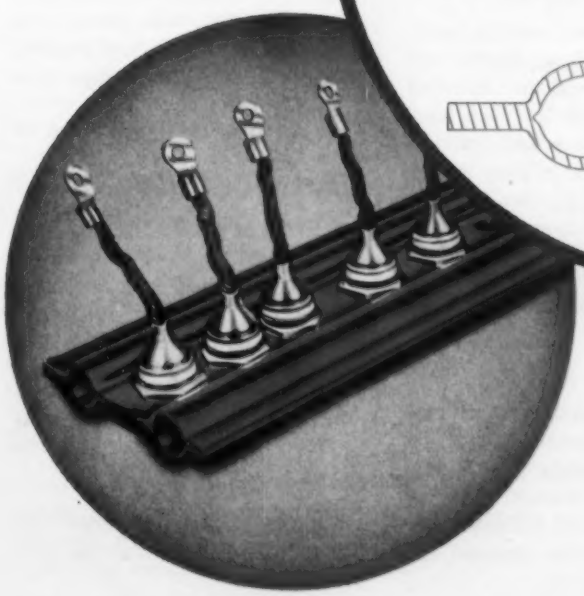
Copper Tube-In-Strip spiral containing both water and refrigerant passages for increased cooling efficiency.

Copper Tube-In-Strip and copper fin assembly for automobile radiator.

Copper Tube-In-Strip and finned stock assembled and then inflated into automotive air conditioning coil.

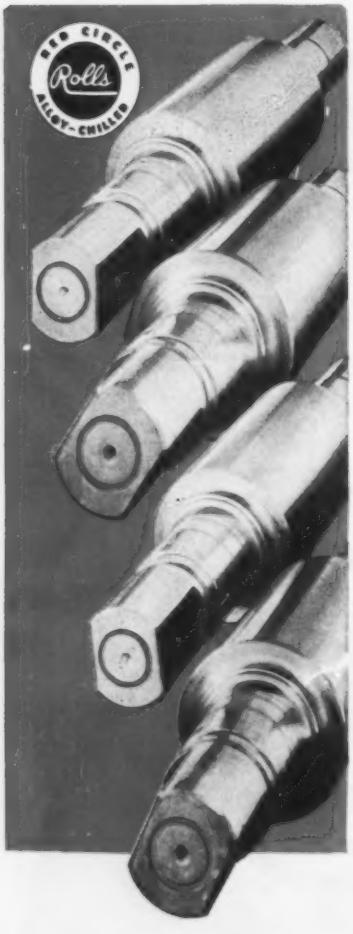
ANOTHER TRIUMPH!

PHOTO IN CIRCLE ABOVE SHOWS water-cooled semiconductor power rectifier design with integrally mounted transformer as made by General Electric Company. Rated 150 volts, 4000 amps., d-c, it is used for copper refining.



(Above) CROSS SECTION of water-cooled bus, featuring improved cooling method. Dual, leak-proof water passages are formed in solid bus, made from Revere Tube-In-Strip, without the need for welding or brazing. They are located on each side of a section of bus to which silicon cells can be bolted without penetrating the coolant passages.

(Left) **OVERALL VIEW** of new sealed liquid-cooled bus illustrating manner of mounting several silicon rectifier cells. Unique "dry" mounting permits installation of cells without draining liquid from bus. Cells are individually attached to the bus with threaded stud and nut, simplifying the mounting of a cell, and making it unnecessary to disturb any of the other cells on the bus.



Red Circle Rolls

for all purposes

The Red Circle on the Roll is the Hyde Park mark of Quality. Hyde Park makes rolls for every type mill.

CHILLED ROLLS · ALLOY IRON ROLLS · MOLY ROLLS · NICKEL CHILLED ROLLS · GRAIN ROLLS · COLD ROLLS · SAND ROLLS

for
Finer Finish, Longer Life
and Greater Tonnage
specify Red Circle

Hyde Park
FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland Co., Pa.
ROLLS
ROLLING MILL MACHINERY
GRAY IRON CASTINGS

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 151.

Tarnish Remover

Acid base liquid outlined in a 4-page bulletin removes oxide and tarnish from copper, copper alloys and silver (MacDermid, Inc.)

For free copy circle No. 1 on postcard, p. 151

Grinder Safety

Grinding wheel safety is thoroughly discussed in a 24-page booklet. Titled "Safety Recommendations for Grinding Wheel Operation," it's written in layman's terms. (Grinding Wheel Institute)

For free copy circle No. 2 on postcard, p. 151

Low-voltage Starters

Features of one maker's automatic reduced voltage starters are described in a bulletin. Included are motor controls for centrifugal compressors, hammer mills, pumps, large conveyors, large fans, motor-generator sets and other applications. They cover a range from 50 to 1200-hp, 600-v. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 3 on postcard, p. 151

Technology

Industrial technology is advancing so rapidly it could well "reshape the world in a single generation." So states a new booklet. Bringing together hundreds of different types of skills, and utilizing advanced scientific methods, technology can do in a few years jobs that formerly took centuries, the booklet declares. The 36-page booklet describes a large corporation as a principal element in technology. (E. I. duPont de Nemours & Co.)

For free copy circle No. 4 on postcard, p. 151

Dust Collector

In 12 pages a bulletin details a dust collector. This collector is a wet inertial type unit installed as part of the duct. It's only one-tenth the size of other collectors of comparable performance. Collection efficiencies are 95 pct of all dust 5 microns in size, 80 pct of dusts in the 1 micron range. (Joy Mfg. Co.)

For free copy circle No. 5 on postcard, p. 151

Air Conveyors

A 4-page bulletin details many types of pneumatic conveyor systems for handling bulk materials such as polyethylene and other types of plastic pellets, lime, alum, glass cullet, fine metal chips and borings, small parts and press scrap. (National Conveyors Co., Inc.)

For free copy circle No. 6 on postcard, p. 151

Heat Gage, Control

Thermistor based temperature measurement and control instruments are covered in a brochure. It describes 4 measuring instruments, 2 control instruments and 22 probe types. (Yellow Springs Instrument Co.)

For free copy circle No. 7 on postcard, p. 151

Spectro Testing

Spectrochemical laboratory testing and analysis facilities are out-

lined in a bulletin. (Bowser-Morner Testing Labs., Inc.)
For free copy circle No. 8 on postcard, p. 151

Graphic Aids

Over 550 pressure-sensitive tapes of many sizes, colors, and patterns for making graphs, charts, layouts, printed circuit drawings, map overlays, slides, and other presentations are illustrated in a 32-page booklet. (Chart-Pak, Inc.)
For free copy circle No. 9 on postcard, p. 151

Overhead Handling

Detailed studies of track design, peening, and stresses are given in a booklet. Also covered are various types of overhead carriers, cranes, tractors, track switches, buckets, grabs and electrification. (Cleveland Tramrail Div.)
For free copy circle No. 10 on postcard, p. 151

Thermocouples

Thermocouples are introduced in a new bulletin. Available types, materials, sizes, and thermocouple curves are detailed. (The Bristol Co.)
For free copy circle No. 11 on postcard, p. 151

Saw Sharpener

Three sharpeners in one; that's how a 4-page bulletin describes an automatic saw sharpener. It handles: circular, hack or band saws; all types of materials, steel, brass, copper, bronze, aluminum, even plastics. (Hamco Machines, Inc.)
For free copy circle No. 12 on postcard, p. 151

Numerical Control

An 8-page brochure explains how a machine tool numerical control setup works. It controls point positioning and automatic contouring. (Stromberg-Carlson Div., General Dynamics Corp.)
For free copy circle No. 13 on postcard, p. 151

Snap Switches

Snap-action switches for aircraft, missiles and missile ground handling equipment are covered in a bulletin. It describes sealed, high-heat and

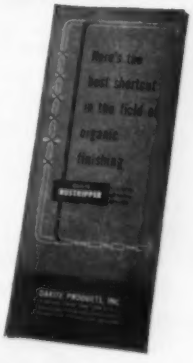
Do you need better ways to strip paint?

When tough finishes resist your present stripping methods, you may need help on some of these problems:

1 How to strip oil-base paints . . . synthetic enamels . . . alkali-resistant plastics . . . resin-base paints . . . japans . . . wrinkle finishes . . . nitrocellulose lacquers . . . alkyds . . . phenolics . . . ureas.

2 How to strip zinc chromate primers without etching aluminum.

3 How to strip paint from vertical surfaces and undersurfaces where thin-bodied strippers run off without doing their work.



4 How to strip metal parts that are too large to be soaked in tanks.

5 How to strip paint, pigment residues, phosphate coatings and rust in one operation.

6 How to strip paint from rejects, conveyor chains, racks and hooks in continuous operation.

Oakite has more than a dozen fine stripping materials for these and similar jobs.

FREE For information on problems 1, 2, 3 and 4 ask for a copy of "How to STRIP PAINT". For more on problems 5 and 6 ask for "Here's the best shortcut in the field of organic finishing". Write to Oakite Products, Inc., 30H Rector St., New York 6, N. Y.

OAKITE

Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

Ordinary spring and Strippit Hydra-Spring of equivalent force.

equal stripping power in 1/6 the space

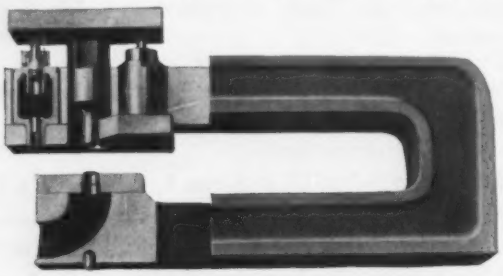
to cut your heavy-duty tooling costs!

Where high stripping pressures are required due to size and type of work or thickness of stock, Strippit Hydra-Springs are the answer. Utilizing the compressibility of liquids, Hydra-Springs develop up to six times the force of equivalent mechanical springs, greatly reducing the number, travel and size of stripping units required.

Impressive economies through Strippit flexible multiple-unit press setups

Like the Strippit, the Hydra-Spring is used in the Strippit line of independent, self-contained, self-stripping punching units. This is the tooling system that breaks the time and cost barriers of fixed perforating dies by permitting simple bench assembly setups . . . all but eliminating press down-time whether it's a long production run, a pilot run for design changes or a "repeat" run later on. No burring necessary, of course.

WHATEVER YOUR PIERCING OR NOTCHING APPLICATION, don't miss the major savings so many industries are enjoying with flexible Strippit tooling. Write today for full details, and if you wish, a demonstration at your plant by a mobile Strippit unit.



Using Hydra-Springs for the heaviest duty work, the Strippit line of hole punching units offers a complete range of capacities up to ¾" in mild steel. A full stock of quick-change standard tools or "specials" made to your order. Warehouse stocks in Chicago and Los Angeles.

WALES STRIPPIT COMPANY

202 Buell Road • Akron, New York

UNIT OF HOUDAILLE INDUSTRIES, INC.

Manufactured in Canada by Strippit Tool and Machine Limited, Brampton, Ontario

FREE LITERATURE

shock-resistant types. (Micro Switch Div., Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 14 on postcard, p. 151

Capillary Tubing

Capillary tubing covered in a memorandum comes in lengths up to 3000 ft. The 11-page publication says tubing with a maximum OD of 0.055-in. and maximum ID of 0.006-in. can be furnished. (Superior Tube Co.)

For free copy circle No. 15 on postcard, p. 151

Cemented Carbides

A new catalog gives information on Carboloy cemented carbide cutting tool materials. Listed are both positive and negative rake toolholders, Carboloy cemented carbide tools, tool bits and inserts. (Metallurgical Products Dept., General Electric Co.)

For free copy circle No. 16 on postcard, p. 151

Refractories

A refractories company is offering three bulletins. The first deals with fire brick cement, the second with plastic fire bricks, and the third with castables. (For free copy write on company letterhead to Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia 47, Pa.)

Tool Steels

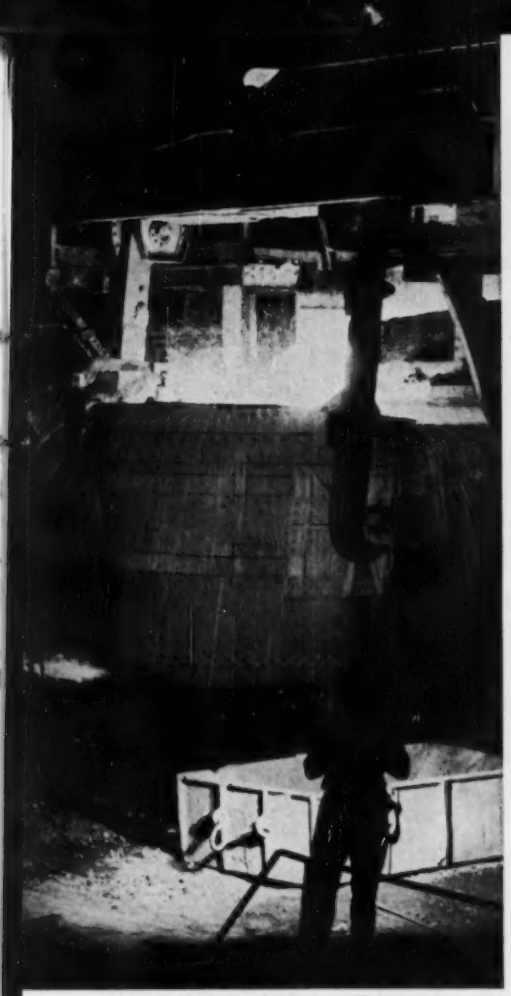
Listing brands of 13 tool steel suppliers is a new chart. It classifies, by general type and SAE number, 16 different grades of tool steel. (Uddeholm Co. of America).

For free copy circle No. 17 on postcard, p. 151

Carbide Tools

"Cemented Carbides for Industry" is a 32-page booklet. It includes material previously found in five separate bulletins. Listed for the first time is an extremely hard cutting grade. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 18 on postcard, p. 151



ALCO *steel, made in small heats to exact metallurgical specifications, is your assurance of high-quality forgings.*

ALCO's *regular forgings offer many opportunities for cost reduction in machine set-up and tooling.*

HOW ALCO FORGINGS HELP LOWER COSTS

Forgings from ALCO are controlled during every step of production to assure uniformity and conformance to your specifications.

In either regular or Hi-Qua-Led® grades in any AISI specification, or in stainless steel, ALCO circular and open-die forgings offer you unique advantages. They can lower your costs in machine set-up and tooling, because you are able to standardize procedures and set machining speeds for the best overall economy. Yet this extra opportunity for profit is obtained with no additional expense.

ALCO's forged and rolled circular forgings range from 18 to 145 in. OD; open-die forgings from 500 to 30,000 lb and 40 ft in length; mandrelled ring forgings to approximately 60 in. wide.

Your inquiries will receive prompt processing. For more information, contact your nearest ALCO sales office, or write ALCO Products, Inc., Department 157, Schenectady, New York.

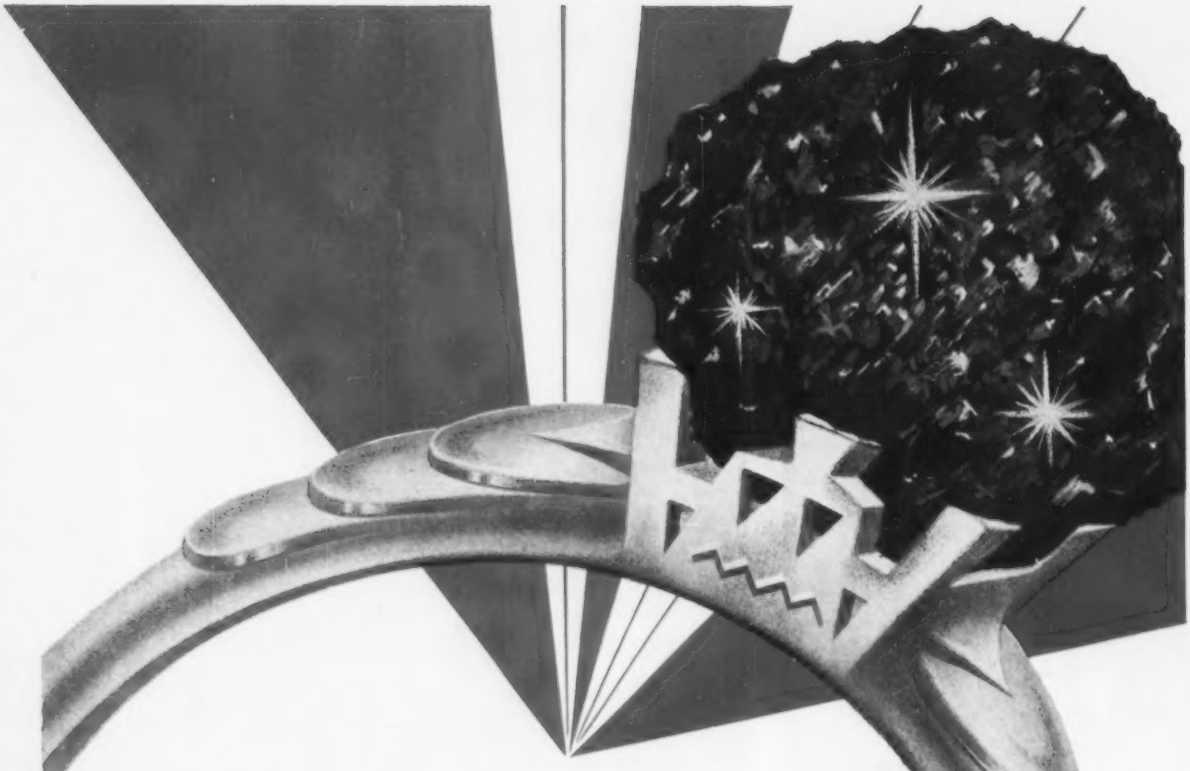
ALCO

ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES • DIESEL ENGINES • NUCLEAR REACTORS • SPRINGS • FORGINGS • WELDMENTS • OIL FIELD EQUIPMENT



Precious Jewel of Industry's Future

"Black Diamonds" are America's most valuable resource for today and tomorrow! Only Bituminous coal can fully meet industry's needs for more electrical energy and more plant-power.

Convenient reserves of B&O Bituminous offer an unlimited supply of coals for every purpose, at low-cost. *Ask our man!*

LET OUR COAL TRAFFIC REPRESENTATIVES suggest a B&O Bituminous for your needs.

COAL TRAFFIC DEPARTMENT B&O RAILROAD
Baltimore 1, Md. LExington 9-0400

BALTIMORE & OHIO RAILROAD

Bituminous Coals For Every Purpose

LINKING 13 GREAT STATES WITH THE NATION B&O

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Process Equipment

Equipment for process industries is detailed in a 12-page brochure. It discusses pumps, pneumatic conveyors, fluidizing conveyors, rotary compressors, vacuum pumps, horizontal-grate coolers, suspension type preheaters, fans and hot gas washers, blowers and gas pumps. (Fuller Co.)

For free copy circle No. 20 on postcard

Insulation

Insulation identified in a 6-page folder provides heat control to 2000°F with only a fraction of an inch thickness of material. Material is a refractory fiber felt. (Johns-Manville).

For free copy circle No. 21 on postcard

Phosphating

A dry iron phosphating compound outlined in a 2-page bulletin cleans and phosphates steel, aluminum, zinc and cadmium in one operation. Resultant coat serves as a paint base and a rustproofing coating. It can be sprayed or dipped. (MacDermid, Inc.)

For free copy circle No. 22 on postcard

Cemented Carbides

A 50-page catalog covers a firm's whole line of cemented carbide products. It includes data on: tools, boring bars, standard blanks, brazed tools, and clamped inserts. (Kennametal, Inc.)

For free copy circle No. 23 on postcard

Ferrochrome

Savings in over-all ingot costs obtained by using exothermic ferrochrome for large openhearth ladle additions are described in a 4-page folder. Cost cuts result from closer control of analysis, higher chromium recoveries, easier grain refining, accurate additions without weighing, and easier handling. (Electro Metallurgical Co.)

For free copy circle No. 24 on postcard

Industrial Truck

Compact design and low cost are key features of a 4000-lb industrial truck announced in a 4-page folder. The electric-powered truck comes in two models, 68- and 83-in. high. (Elwell-Parker Electric Co.)

For free copy circle No. 25 on postcard

Truck Crane

Availability of a 50-ton capacity truck crane is announced in an 8-page catalog. (Construction Equipment Div., Baldwin-Lima-Hamilton Corp.)

For free copy circle No. 26 on postcard

Degreasing

Modern methods of degreasing metal surfaces are examined in a series of bulletins. Emulsion cleaners are discussed which eliminate fire hazards and effectively remove dirt and soil. (L. Sonneborn Sons, Inc.)

For free copy circle No. 27 on postcard

Aluminum Fastener

Threadless, drive-on type fasteners (aluminum stud caps) are featured in an information sheet. A companion sheet relates test report data showing how the fasteners resist 130-lb pull-off force. (Huck Mfg. Co.)

For free copy circle No. 28 on postcard

Batteries

Stationary batteries are subjects of a 12-page bulletin. These are lead-antimony grid batteries. (C & D Battries, Inc.)

For free copy circle No. 29 on postcard

Beryllium-Copper Tube

Small diameter beryllium-copper tubing is described in a data memorandum. It covers: mechanical and

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **12/4/58**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

PLEASE TYPE OR PRINT

Name .....

Title .....

Company .....

Co. Address .....

.....

City ..... Zone ... State .....

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE
Post Office Box 77, Village Station
NEW YORK 14, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **12/4/58**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

Page .....Product .....

Page .....Product .....

PLEASE TYPE OR PRINT

Name .....

Title .....

Company .....

Co. Address .....

.....

City .....Zone ....State .....

FREE LITERATURE

physical properties, applications, corrosion resistance, production limits, heat treatment, fabrication, and standard size tolerances. (Superior Tube Co.)

For free copy circle No. 30 on postcard

Mechanical Seal

Corrosion-resistant mechanical seals are reviewed in a bulletin. This seal combines properties of Teflon with a bellows design for an effective fluid seal. (Garlock Packing Co.)

For free copy circle No. 31 on postcard

Polyvinyl Acetate

Seven data sheets deal with polyvinyl acetate emulsions, solutions, and dispersions. (Borden Chemical Co.)

For free copy circle No. 32 on postcard

Steel Shelving

A bulletin presents a new line of phosphated steel bookcase shelving. (Penco Div., Alan Wood Steel Co.)

For free copy circle No. 33 on postcard

Steel Tubing

Seamless and electric resistance welded steel tubing is listed in an 8-page catalog. Tubing comes in mechanical, aircraft mechanical, airframe, and pressure grades. (Ohio Seamless Tube Div., Copperweld Steel Co.)

For free copy circle No. 34 on postcard

Walkie Truck

Features that make a walkie-type truck ideal for work in highly congested areas, short hauls or intermittent operations are illustrated in a 16-page booklet. (Automatic Transportation Co.)

For free copy circle No. 35 on postcard

Lift Truck

Narrow aisle, rider type, electric tiering trucks are outlined in a 7-page circular. The 24-volt units come in 2000- or 3000-lb capacities, operating in 6-ft wide aisles carrying a 40-in. long load. (Lewis-Shepard Products, Inc.)

For free copy circle No. 36 on postcard

Conveyor Belt

No breaker fabric is needed with a new conveyor belt, says a 12-page brochure. This means more thickness of the cover is used. Other assets listed: flexibility, shock resistance, long life for vulcanized or fastener splices, rip resistance. (Raybestos-Manhattan, Inc.)

For free copy circle No. 37 on postcard

Gas Welding

A 4-page folder describes automatic welding wire for inert-gas and submerged-arc welding processes. (Page Steel & Wire Div., American Chain & Cable Co.)

For free copy circle No. 38 on postcard

Automated Tractor

An electronic industrial tow-tractor shown in a bulletin needs no operator. Either an optical or a wire guidance system runs it. Tractor is battery powered. (Barret-Cravens Co.)

For free copy circle No. 39 on postcard

Calibrating, Weighing

A new calibrating and weighing system is announced in a 4-page bulletin. It discusses advantages of this transistorized, battery powered system. The system calibrates load cells, torque-measuring dynamometers, thrust stands, testing machines and other force measuring equipment. (Morehouse Machine Co.)

For free copy circle No. 40 on postcard

Butterfly Valves

An 11-page brochure covers rubber seated butterfly valves. It contains a complete description of the valves, gives photographs, dimensional sketches and a list of installations. Valves are available in virtually any size, including ones specifically designed for metals firms (i.e., blast furnace gas mains). (S. P. Kinney Engineers, Inc.)

For free copy circle No. 41 on postcard

Spring Steel

by SUPERIOR

for the

uniform behavior

you require

in fabrication!

in service!

Uniform, dependable response to your manufacturing processes and subsequent service requirements is outstanding in SUPERIOR Spring Steel. We build uniform behavior into every coil, from specified analysis of composition to final anneal before shipment. We're strip steel specialists: *you gain by it.* Specify SUPERIOR for your spring steel needs!

Superior Steel

DIVISION OF

COPPERWELD STEEL COMPANY

CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

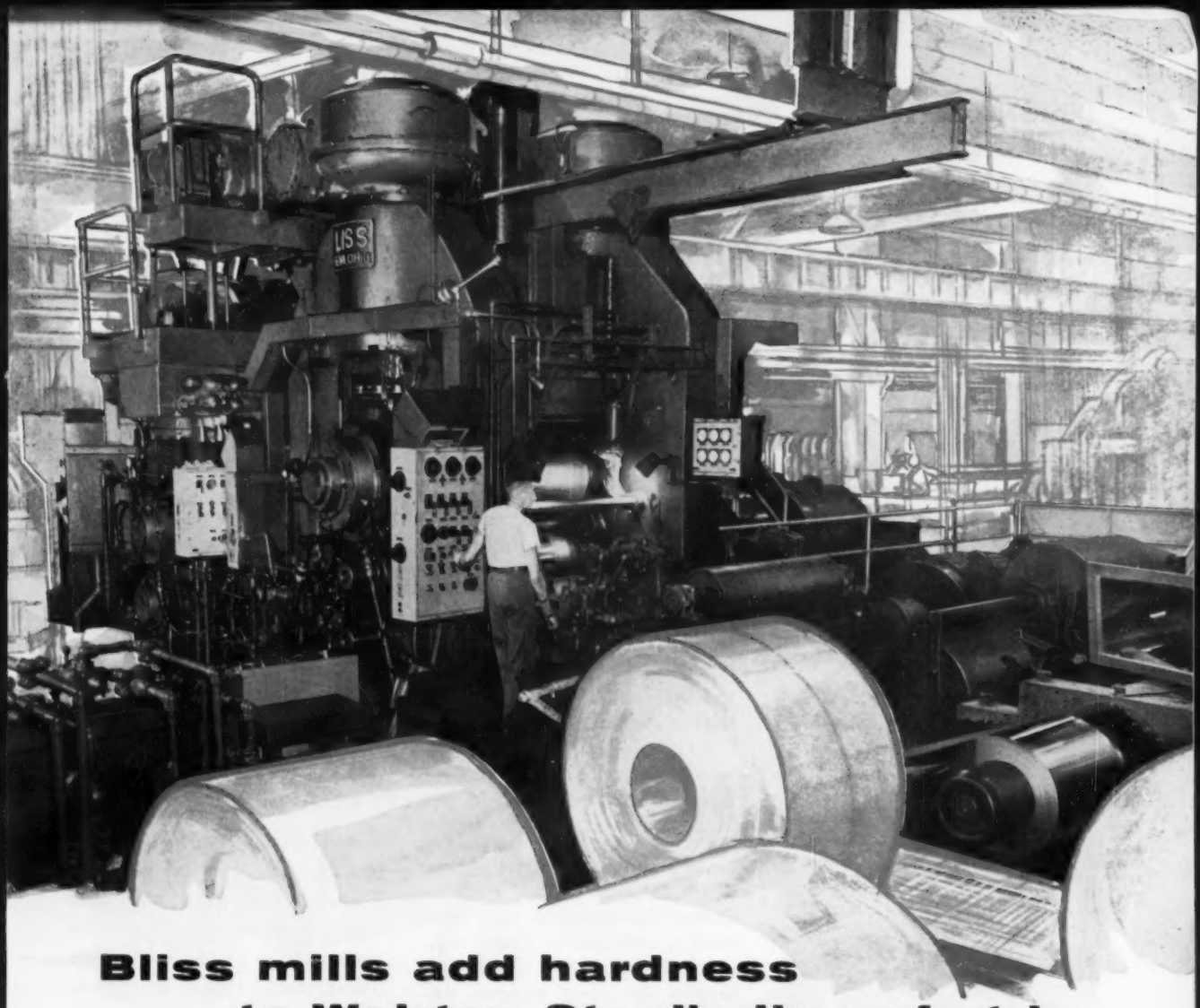
FROM A LITTLE VANADIUM . . . BIG RESULTS! How true. Just a "pinch" of vanadium produces big results in low alloy steels, large forgings, deep drawing steels. In high-speed and other tool and die steels it is indispensable. Keep in mind vanadium is one of the most *effective* addition agents you can buy. No other single alloying element can do so many jobs so well. What's more, you'll find that vanadium is plentiful and economical.

Vanadium also has wide uses in aluminum-base and titanium-base alloys, as well as glass, ceramics, inks, coloring agents, and in catalysts for synthetic textiles and petroleum refining. And now—High Purity Vanadium Metal is commercially available in many forms for research and the development of new products for the world of tomorrow. So you're missing an important bet if you don't find out for yourself about Vancoram Vanadium Products. Your VCA representative is ready to help you. Call him or write for information.

VANCORAM

VANADIUM CORPORATION OF AMERICA

420 Lexington Ave., New York 17, N. Y.
Chicago • Cleveland • Detroit • Pittsburgh
Producers of alloys, metals and chemicals



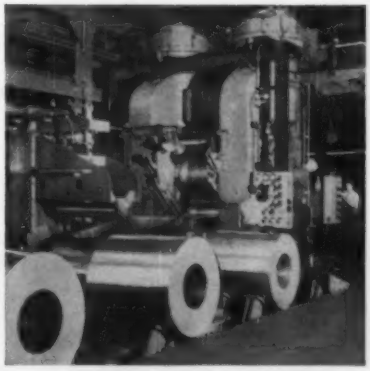
Bliss mills add hardness to Weirton Steel's line of strip

Weirton Steel Co., Division of National Steel Corp., the nation's largest independent producer of tin plate, uses a Bliss mill to achieve exacting temper and quality of its strip prior to plating. It is a four-high, two-high two stand tandem mill recently installed in its Weirton, W. Va., plant.

Through this unit Weirton has rolled a wide variety of steels in gages ranging from .00435 to .0147 inches and at an average maximum speed of 4,500 feet per minute. Well known products such as Weircote and Weirzin zinc coated steel are just two of Weirton's steel products to which this mill contributes.

A second Bliss mill tempers high-carbon, high-phosphorous, deep-drawing and galvanizing steels at the rate of 800 tons a day, while a new Bliss 48-inch slitting line is used to slit galvanized steel in gages from .0135 to .135 inches at speeds of 200 to 1,000 fpm. Both rolling mills are equipped with Amerigear-Bliss spindles.

These three installations provide one more example of the ready acceptance of the name of Bliss in the rolling mill industry—both here and abroad. To learn how Bliss equipment can help increase your rolling capacity, simply write for our new 84-page Rolling Mill Brochure, Catalog 40-B.



Four-high temper mill handles 30,000-lb. coils at speeds up to 3,500 fpm...has rolled 1,000 tons in a single day. Back-up rolls were supplied by Bliss' Mackintosh-Hemphill Division.

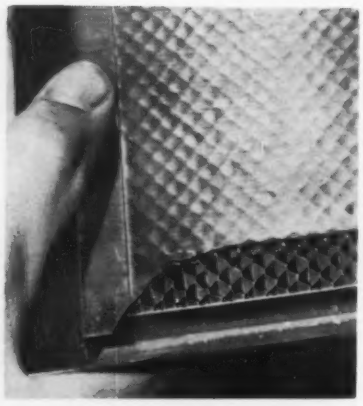
BLISS
SINCE 1857

Bliss is more than a name . . . it's a guarantee

E.W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

New Materials and Components



Lightweight Honeycomb Displays High Strength

So strong it qualifies for use on hypersonic aircraft; so light it floats on water. This describes a new honeycomb sandwich structural material. The stainless steel honeycomb meets strength and heat-treating requirements for aircraft that in a few years will fly at 2000 mph. The material consists of six-side steel cells with a thin sheet of stainless steel brazed out of both sides of the honeycomb. It's about ½-in. thick. Research shows it shapes to fit contours of any surface. Tests also show it has virtually the same strength as a piece of stainless steel of the same thickness; yet it weighs about a tenth as much. Only small quantities have been produced so far. However, its developer is now working on improved production techniques. (Avco Mfg. Co.)

For more data circle No. 42 on postcard, p. 151

Speed Reducers Use Gears of Aluminum Alloy

Driven worm gears of aluminum bearing-type alloy give added design flexibility to new speed reducers. The aluminum alloy gears boast a considerable torque capacity. Though the maker also supplies the speed reducers with molded nylon gears, it reports that aluminum alloy worms have to three times the torque capacity. Reducers have ratios of 3½ to 60:1 in solid or hollow output shaft models. Complete fhp units, with molded nylon glass fiber cases and machined steel worm gear input shafts, weigh less than 21 oz each. Units measure 3¾ high, 3⅞ wide, 3⅛-in. deep. Typical applications include: business machines, appliances, control devices, servo mechanisms, and other power transmission systems. (Rampe Mfg. Co.)

For more data circle No. 43 on postcard, p. 151

Lubricator Oils Air-run Tools And Equipment

Constant and precisely controlled lubrication to compressed-air operated tools and equipment is provided by this unit. With only one adjustment, it injects an oil fog into an air system at one to 1200 cfpm. It supplies this at 10 to 150-psi in transparent bowl models; 10 to 250 psi with metal bowls. The atomizing unit is engineered to lubricate automatically not just one, but many pieces of equipment. It uses a soft, flexible flow guide located in front of a special venturi jet in its throat. As air demand increases, the flow guide collapses against the venturi jet. This permits maximum air flow, offsetting pressure drop. The flow guide automatically returns to normal as air demand decreases. Oil atomizes in the venturi jet and travels via the air stream to point of use. Pipe sizes run from ¼ to 2-in. NPT; reservoir capacities, 3.5 oz to 5 gal. Automatic filling units are also available. (Wilkerson Corp.)

For more data circle No. 44 on postcard, p. 151

brighten homes, brighten sales with life-long beauty

UNILOY
STAINLESS STEELS

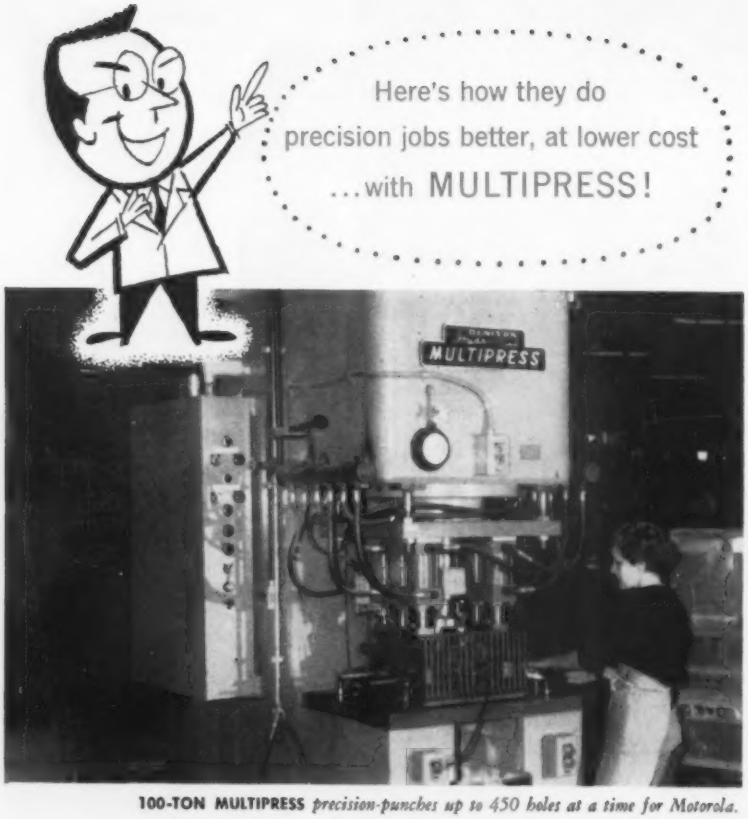
The gleaming beauty, plus the permanence and ease of cleaning have made stainless steel the wife's delight—and sold many a home.

When made from Uniloy stainless steel, flatware, utensils, and other kitchen accessories have that inviting blend of beauty and permanence so appealing to the modern homemaker.

Uniloy stainless steels—easy to work and form—are rolled to most exacting specifications by steel makers who have been making specialty steels since 1884.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

STAINLESS STEELS • TOOL STEELS • HIGH TEMPERATURE METALS



100-TON MULTIPRESS *precision-punches up to 450 holes at a time for Motorola.*

MOTOROLA punches TV chassis faster, cuts scrap loss with DENISON Multipress

THESE Motorola radio-TV plated-circuit plastic chassis bases are precision-punched faster . . . more accurately . . . at less cost with Denison hydraulic Multipress.

Here's why: with one quick ram-stroke, a 100-ton Multipress punches up to 450 holes at a time in each base. Holes are clean and smooth... affording the necessary uniform plating surface inside each hole. There's *no bulging . . . no cracking* around or between holes because Multipress delivers controlled hydraulic pressure.

Plus benefits with Multipress—longer die life . . . almost no punch breakage . . . *far less scrap loss* . . . handles 15 different dies for quick changeover to other full-production jobs.

Endless jobs throughout the electronic and other industries can be done faster . . . for less cost with Denison hydraulic Multipress—from 1 to 100 tons. Ask your Denison Production Specialist to show you how.

BEFORE AND AFTER . . . *plated-circuit chassis are punched faster . . . with less scrap . . . to precision limits with Denison hydraulic Multipress.*

Denison, Denison HydrOILics, and Multipress are registered trademarks of Denison Eng. Div., ABSCO

DENISON HydrOILics

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1242 Dublin Road • Columbus 16, Ohio
HYDRAULIC PRESSES • PUMPS • MOTORS • CONTROLS

DESIGN DIGEST

Vinyl Covering

Outdoor displays using vinyl-clad aluminized steel resist fading, cracking, chipping and peeling even under difficult moisture or temperature conditions. The tough vinyl outer covering, permanently bonded to heavy gage aluminized steel, also resists damage from other hazards to which outdoor mouldings are exposed. Ordinary surface dirt comes off merely by wiping with a damp cloth. (Clad-Rex Corp.)

For more data circle No. 45 on postcard, p. 151

Expanded Ti Sheet

Expanded titanium sheet for plating and chemical uses comes in gages from 0.050 to 0.125-in. into ½ to 1½-in. diamonds, in standard 48 by 96-in. sheets. These sheets bend over a radius four times the metal thickness in either the longitudinal or transverse direction after sandblasting and pickling. Annealing does not improve the bend factor. (Mallory - Sharon Metals Corp.)

For more data circle No. 46 on postcard, p. 151

High-strength Bolts

Large diameter lockbolts in prototype production come in ⅝ and ¾-in. nominal pin diameters. These high-tensile fasteners have already been accepted for use on such heavy steel structures as railway freight cars and commercial buildings. They boast high shear strength and provide added advantage of automatic uniform installed tensile preload and speed of installation. (Huck Mfg. Co.)

For more data circle No. 47 on postcard, p. 151

Composite Metal

Priced lower than its clad metals is a processor's new composite metal strip. It contains a hard, dense layer of electrolytically deposited metal. This is heat-treated to achieve a metallurgical bond to a base metal strip. Finally it's rolled

to finished thickness and temper. The overlay strip is rolled to the same temper required of the base metal. Overlay metals include: silver, nickel, copper, tin, zinc, gold, cadmium, and solder combinations. These can be bonded to: copper, brass, nickel, cupro-nickel, steel, and bronze. Maximum width runs to 7 in. for most combinations, to 10 in. for a few others. Minimum is to 1/16 in. Plating thickness can be to 0.005 in. per side. Minimum is 0.0001 in. per side. Over-all thickness: from 0.125 to 0.001 in. Strip stamps, draws, or forms much like any clad metal. It solders, brazes, or welds. (American Silver Co.)

For more data circle No. 48 on postcard, p. 151

Plastic Molds

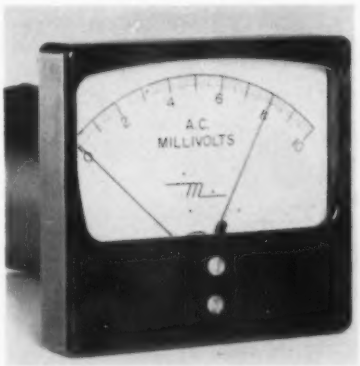
Plastics to produce plastics are now reality. High temperature epoxies are now being used in making molds for producing polyester parts. Prepared from special formulas and curing agents for high temperature service, accurate epoxy molds are made cheaply and

quickly. There are several steps entailed in the mold preparation including: (1) Application of surface gel coating of epoxy material; (2) Build-up or reinforcement of gel coating; (3) Preparing core of aluminum chips or fibers bonded with epoxy material, and (4) Heat cure of mold and punch (prepared in similar manner). Epoxy mold is heated on a platen about 300°F Polyester molding compound is then introduced. Under heat and pressure, the plastic is converted into finished parts. (Furane Plastics, Inc.)

For more data circle No. 49 on postcard, p. 151

Voltmeter

Panel mounted, this electronic voltmeter has built-in control features. It combines locking contact control action of a meter-relay with specialized measuring ability of a vacuum tube voltmeter. Thus, cir-



cuits that require a vacuum tube voltmeter, because it measures voltage without loading the circuit, may also be controlled by the same instrument. The voltmeter has typical uses as a component of amplitude-limit control systems, missile-parameter ground test setups, and strain-gage and load-cell monitoring units. Available both in ac and dc models, it occupies 4½-in. panel space. Depth of barrel is just 4.65 in. For control purposes, voltage limits are set by pointers that may be turned easily anywhere on the dial. (Metronix, Inc.)

For more data circle No. 50 on postcard, p. 151

Machine Power Unit

For simple, economical automation of machine tools, new way-type hydraulic units can be used over and over on a wide variety of setups. Design permits either horizontal or vertical mounting. They adapt to machines for drilling, reaming, milling, boring, chamferring and similar jobs. Self-contained, they feature cross-keyed construction. This allows ready removal and remounting. Features include: variable delivery pump, hardened and

Solve your pressing problems fast with...

DENISON

Super Market

Multipress service!

1. GOT A PROBLEM? Which pressing job has you stumped – how to make it . . . do it faster . . . turn it out for less? Bring in your job . . . talk it over with a Denison Multipress Specialist.

2. OUR "IDEA FILE" IS AMAZING – Details on thousands of pressing applications – assembly, broaching, crimping, staking operations – production-proved on Multipress. Any job from Aircraft staking to Zipper making.

3. WE'LL TEST-RUN YOUR JOB – In our production lab. See how Multipress actually does the job . . . how fast and at what cost.

4. YOU'RE IN PRODUCTION – Multipress can mean faster, higher quality output at less cost. There's a complete Multipress line – from 1 to 75 tons. What's *your* pressing problem? Let's tackle it now.

in **NEWARK**

315 Central Avenue
Clark, New Jersey
Phone: FUlton 1-2929

and in – CHICAGO • DETROIT • CLEVELAND
HOUSTON • ATLANTA • LOS ANGELES

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1242 Dublin Road • Columbus 16, Ohio

Scale section in foreground permits weighing coils and sheets enroute to shipment. Adjoining semi-alligator switch provides means of diverting to either of two lines. Part of extensive Logan conveyor system in prominent aluminum mill.

Trimming costs to meet competition? The solution is mostly in your shop. With so much importance on the production end, it's small wonder that management is giving more and more attention to materials handling.

Logan Conveyors have been the key to greater savings in time, space and effort for large companies and small for over a half century. Production experts who specify Logan, expect and receive equipment designed for sound day-after-day performance.

Why not see what Logan can do for you? Write for more information or for a call from a qualified engineer.

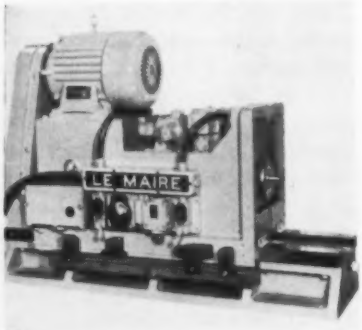
Write for your copy of the Logan TROLLEY CONVEYOR catalog

LOGAN CO., 545 CABEL ST., LOUISVILLE 6, KY.

Logan Conveyors

DESIGN DIGEST

ground ways, automatic lubrication and spindle speed changes. For ease of maintenance and replacement, all

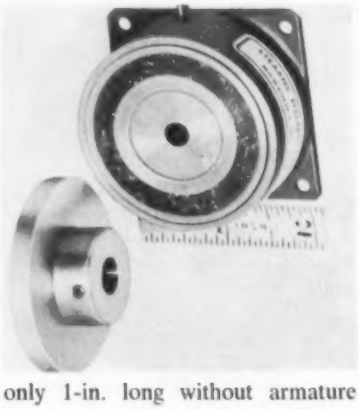


component elements are manifolded and readily accessible. (Le Maire Machine Tool Co.)

For more data circle No. 51 on postcard, p. 151

Compact Clutch

For use where space is short is this flange mounted, stationary field, coupling type clutch. It has a mounting flange only 2⅛-in. square and 1 9/16-in. long, including armature and driven hub, and



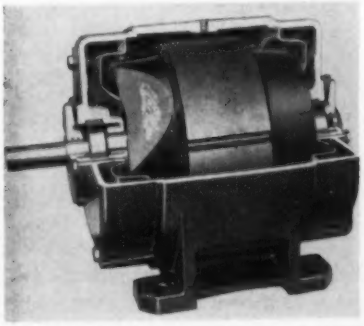
only 1-in. long without armature and driven hub. The clutch can come with a coil suitable for operation on any direct-current source, up to 90-v dc. Static torque rating is 30 in. lb. (Stearns Electric Corp.)

For more data circle No. 52 on postcard, p. 151

Machine Tool Drives

Epoxy encapsulated stator windings for machine tool motors make possible the use of open type motors by builders. Usually, a totally enclosed fan cooled motor protects motor windings from contaminants.

These might otherwise cause motor failure by ruining insulation. The new "super sealed" motors, however, can simplify specifications by allowing use of an open motor. Epoxy encapsulation around the

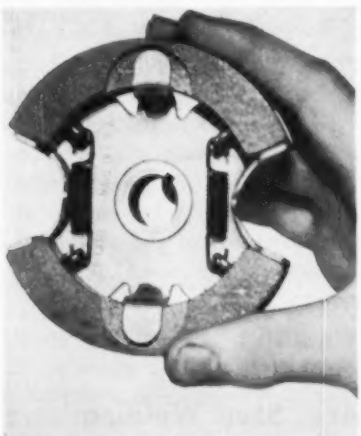


stator windings protects against moisture, dirty coolant, oily grit, dust and fine chips. Plain water or compressed air can be used to clean the units. (Allis-Chalmers Mfg. Co.)

For more data circle No. 53 on postcard, p. 151

Centrifugal Clutch

A new straight centrifugal clutch has just four moving parts. Two springs and two shoes are the only moving components in its simple design. This makes it particularly suitable for motors and small gasoline engines. The clutch can ac-



celerate high inertia loads where smooth starting is essential. It gives overload protection in situations where damaging overloads may occur. And it's recommended particularly for pulsating loads. In addition, the clutch will provide freewheeling when the prime mover is stopped. (Fairbanks, Morse & Co.)

For more data circle No. 54 on postcard, p. 151

WIRE

BACKED BY A HALF CENTURY OF EXPERIENCE

• **Sizes up to 9/16"...**

. . . down to almost the size of a human hair, in low carbon and medium low carbon steels.

• **Wire of many finishes**

the right wire for the job—coppered, tinned, bright, galvanized and other finishes to fit your production needs.

• **Better forming and workability**

Continental Wire is available in almost any temper and analysis in low and medium low carbon steels for your particular forming jobs.

• **Metallurgical service**

Thousands of case histories provide unsurpassed resources for developing a practical solution to your wire problems.

ECONO-COIL—Reduces scrap loss up to 90 percent. Saves material handling time. The Econo-Coil gives you continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gage through ½" diameter. Shipped on returnable Econo-Coil reels.

LEVERPAK—Mechanizes your wire handling, protects wire against moisture, dirt and handling damage. LEVERPAK permits long uninterrupted runs of 500# to 650#, depending on wire sizes. Saves scrap, downtime, stores easily.

SPECIAL SHAPES—D-shaped, V-shaped, oval, half-oval, half-round, square, rectangular, triangular, keystone-shaped and others. Saves fabricating and machining costs.

Chances are you have a problem right now that we can help you solve—with Wire. Call us.

CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

Wire Specialists for over Half a Century

PRODUCERS OF Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

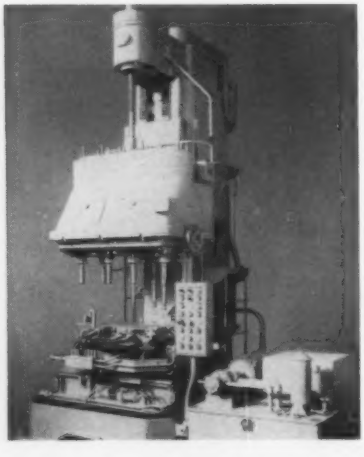
New Production Ideas

Equipment, Methods and Services

Flexible Duct Meets Rigid Specifications

Flexible air duct of a new type combines aluminized asbestos cloth with steel spirals. It meets various rigid specifications, including the Chicago building code. The duct has use in high and low-velocity air conditioning systems. In older buildings, it might prove quite economical, bending without kinking. It installs easily around structural members and in cramped quarters. Little or no cutting of walls and floors is necessary usually. Crush and puncture-resistant, duct restores to its original shape even after a deforming blow. This can reduce replacement costs. The duct consists of two elements: fabric and metal. Fabric is a product of U. S. Rubber Co. It's flame-resistant, underwriters' grade asbestos cloth (at least 80 pct asbestos fibers). This is protected by laminated, polyester-reinforced aluminum foil. (The Wiremold Co.)

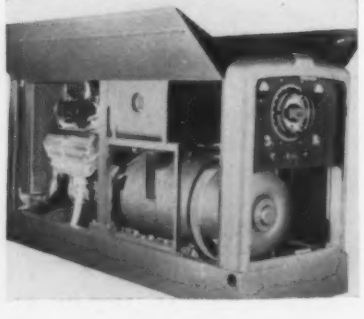
For more data circle No. 55 on postcard, p. 151



Standard Driller Adapts to Multi-Hole Unit

A diesel-engine manufacturer uses this adaptation of a standard vertical adjustable-spindle machine to drill and tap diesel truck engine flywheels of various sizes. Spindles adjust to drill or tap any bolt circle between 14¾ and 18¾-in. diam. This can contain 4, 8, 12 or 16 equally spaced holes. Adjustments are made for spindle locations by turning a handwheel. Drill and tap spindles are located simultaneously. Spindle feeds and feed rates also change automatically. The part is loaded on a 24-in. rotary table. For four holes, only one drilling cycle is necessary. Eight or more holes are made by indexing the part. Then it slides to the tapping position, where the cycle repeats. For unloading, it indexes back to the drilling position. All of these functions are automatic. Spindles are 2⅛ in. nose adjusting, to permit pre-setting of tools. (National Automatic Tool Co., Inc.)

For more data circle No. 56 on postcard, p. 151



Heavy-duty Set Performs Arc, Stud Welding

This 600-amp, direct current, heavy-duty welder performs arc and stud welding. Available with either a gasoline or diesel engine power source, the welder rates 600-amp, 40-v on 60 pct duty cycle. Welding current range is 70 to 800 amp; 1-kw auxiliary power of 110-v dc is available while welding. The gasoline engine driven model uses a Chrysler V-8 engine with 354-cu-in. piston displacement. The diesel engine driven model employs a General Motors engine with 212-8-cu-in. piston displacement. A paralleling attachment is also available, combining two units for 1200-amp

capacity in stud welding, automatic welding, arc air cutting, etc. The attachment has a magnetic contactor, controlled by a push button and by a protective current relay, with a light to indicate when the contactor closes. (Hobart Brothers Co.)

For more data circle No. 57 on postcard, p. 151

Drafting System

An unusual new procedure prepares detail drawings from design layouts with savings up to 50 pct in drafting time. Using photographic techniques to replace hand detailing, the procedure may slash manhours and costs considerably. Its techniques are being expanded now to include preparation of assembly drawings. (Arma Div., American Bosch Arma Corp.)

For more data circle No. 58 on postcard, p. 151

Rotary Furnaces

Designed for continuous operation of either forging or heat-treating, new rotary hearth furnaces supply temperatures from 1200° to 2300°F. The hearth is doughnut shaped with a 7-ft 6-in. OD and a 30-in. column in the center. Chamber height is 15-in. Gas burners are mounted on the lining, which fire against the direction of rotation of the table. Oil or electric burners are optional. A Leeds and Northrup Strip Chart Instrument controls the furnace. (Waltz Furnace Co.)

For more data circle No. 59 on postcard, p. 151

Live Centers

Recently developed driving centers and live centers team up to provide an effective method of holding material between centers for turning and grinding. Combing a new hydro-mechanical driving center and a new compensator live center, with a built-in pressure gage, the tool has hydraulically controlled driving pins. Hydraulic control permits 100 pct effective grip of the pins on material. It balances surface irregularities up to ¼ in. Center point of the driving center is spring-loaded independently of the hydraulic system. This pro-

THE ELECTRIC FURNACE CO. Salem, Ohio
EF
Gas Fired, Oil Fired and Electric Furnaces

FURNACES for Processing Wire, Tubing, Strip and Other Products Continuously

One of the numerous types of continuous furnaces we have built for processing various grades of silicon strip.

We are in position to design, build and put in operation: continuous equipment for hot or cold rolled, high or low carbon, stainless, silicon, tinplate, aluminum, brass, bronze or any other ferrous or non-ferrous metal—for bright annealing, normalizing, galvanizing, aluminizing, tinning or any other process—in the size and type best suited to your plant, process, product or production requirements. No job is too large or too unusual.

Put your production furnace problems up to experienced engineers—it pays.

Installation of five EF special atmosphere continuous furnaces bright annealing stainless steel wire.

3000 lbs. of steel tubing, per hour, are bright normalized in this EF gas-fired radiant tube type special atmosphere furnace.

EF

BULLETIN No. 461
shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.
Send for a copy today!

THE ELECTRIC FURNACE CO.
GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION
Salem - Ohio

Canadian Associates • CANEFCO, LIMITED • Toronto 13, Canada

WARD STEEL CO.

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

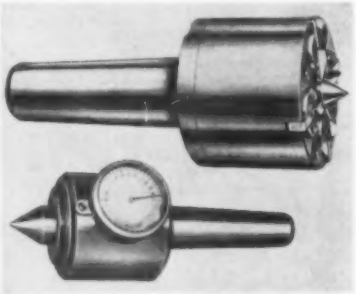
BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

878 Rindge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.
Branch
3042-3058 W. 51st Street, CHICAGO, ILL
Phone: Grovehill 6-2600

NEW EQUIPMENT

vides highly accurate concentricity. Interchangeable driving pins in eight different sizes allow clamping of material from 1 to 10-in. diam with but one driving center. The spring-loaded live center has a



built-in pressure gage. This gives constant visual indication of the exact amount of axial load on the center. (R. B. Tool Co., Inc.)

For more data circle No. 60 on postcard, p. 151

Giant Welder

Exceptionally large in size, a new submerged arc welding fixture serves the fabricator of 85-ft flat cars. Designed and built by and for its user, the huge welding unit has a 385-ft long extending jig. It uses 20 welding heads. These simultaneously accomplish 10 welds approximately 85-ft in length. (Pullman-Standard Car Mfg. Co.)

For more data circle No. 61 on postcard, p. 151

Inspection Unit

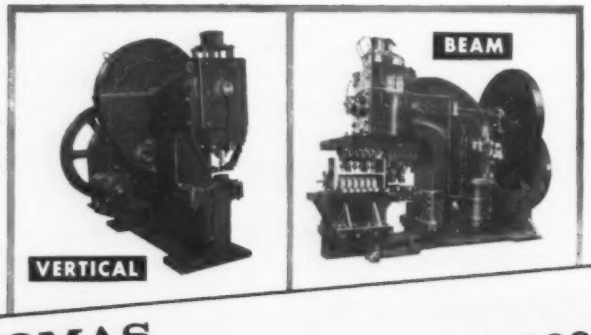
Two beams of light in a new instrument solve the difficult problem of inspecting turbine engine blading. Known as a section-profile projector, the instrument permits viewing of an entire section of a compressor blade, vane, turbine bucket, or half of a forging die. With some training, an operator can rapidly measure dimensions of such parts to within five ten-thousandths of an inch as well as twist to five minutes of arc. (Eastman Kodak Co.)

For more data circle No. 62 on postcard, p. 151

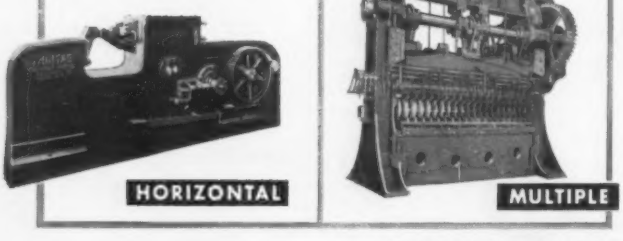
Atmosphere Furnace

This furnace weighs only 47 lb. It's portable and works in either a vertical or horizontal position. For use with crucibles or combustion boats, the unit readily adapts to a materials testing furnace. A special control lets the user plug the unit into 110 or 220 line voltage. The molybdenum heating element is hydrogen protected. A thermocouple provides accurate temperature measurement. Its designer recommends this furnace to researchers and scientists engaged in new material studies. The furnace melts such metals as aluminum, antimony, precious metals and alloys. It may

The trend is to THOMAS



THOMAS has the punch you need



A wide range of capacities for any punching need
Send for bulletin on type you require
SHEARS • PRESSES • BENDERS • SPACING TABLES

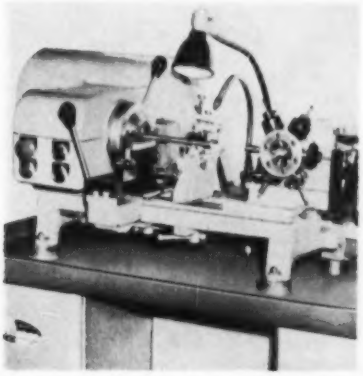
THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 33, PA.

also be used as a sintering furnace or for metalizing. Where high purity is necessary the furnace comes with a "packaged" hydrogen-drying unit. The unit heats very rapidly and is capable of heating from room temperature to 1900°C in one hour and 20 minutes. The unit comes complete and ready for use with a heavy aluminum-sapphire or iron-free stabilized zirconia muffle. The furnace measures 14 in. wide, 15 in. high and 12 in. deep. Muffle measures 1¾ in. ID x 7½ in. high. (Technical Specialties, Inc.)

For more data circle No. 63 on postcard, p. 151

Small Turret Lathe

A new small turret lathe performs fast, accurate machining of small parts. Special feature of the machine is a rapid indexing control. This lets the operator return the turret to the starting position, regardless of number of operations performed, simply by lowering a control handle. Another feature is a steady rest which permits accurate centering of parts. Holding of



parts accurate to within 0.0002 in. is possible with this unit. This steady rest also opens and closes automatically at the start of the cutting cycle. The lathe has a maximum collet capacity of 0.625 in. It has a range of six speeds forward and reverse with speeds available from 720 to 2640 rpm with one motor and 1128 rpm to 5275 with another. (Challenge Machinery Co.)

For more data circle No. 64 on postcard, p. 151

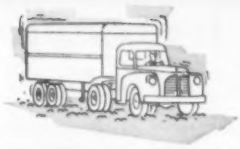
Long Micrometer

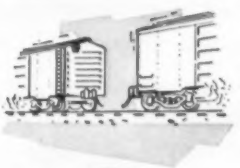
For accurate measurements up to

Vibration-proof joints

now made quickly, economically with new

TOWNSEND VERSA-LOCKBOLT





With the new Townsend Versa-Lockbolt* you get the same high tensile values as with the standard type but they cost less and are easier to install.

Wider grip ranges in a given size are provided by additional locking grooves. Other design changes make it feasible to use them in relatively oversized holes. Inspection time is reduced since hole size is less critical.

These features make for flexibility of design—make calculations simpler and more accurate.

Versa-Lockbolt installation is fast and guns provide uniform draw down or clinch —locking the collar with up to five tons of pressure. The new collar with its flanged integral washer makes it especially suitable for fastening even light gage materials.

For more information on how to get new vibration-proof fastening economy, write Townsend Company, P.O. Box 237-B, New Brighton, Pa.

*Licensed under Huck patents RE 22,792; 2,114,493; 2,527,307 2,531,048; 2,531,049 and 2,754,703

The fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Street Division • Santa Ana, California

An Orderly Salvage Program... Built Around a G-H Hydraulic Baler... *Could be the Solution!*

A well integrated scrap metal salvaging operation, built around the right kind and size of scrap metal baling press, may be the key to neat, orderly disposal of your sheet metal scrap . . . profitably . . . with minimum disturbance to production.

Galland-Henning Hydraulic Balers for sheet metal scrap are fast, powerful, rugged and efficient. They convert stampings, clippings and other light sheet metal scrap into dense compact bales always in demand by mills, foundries, and smelters.

For competent counsel on your scrap metal salvaging and baling operations . . . based on years of successful experience . . . write

GALLAND-HENNING MFG. CO.
2725 South 31st St. • Milwaukee 46, Wis.

GALLAND-HENNING
SCRAP METAL BALING PRESSES

A 8727-3/5

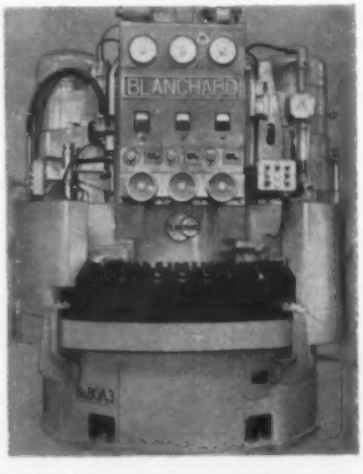
NEW EQUIPMENT

40 ft, a stick micrometer set comprises: (1) a micrometer head, reading in 0.001-in. increments; (2) a 1-in. spherical-end piece, and (3) additional pieces ranging in size from 1 to 24 in. sufficient to join for any required length. Sets range from 3-in. to 2-ft capacity to 6-in. to 40 ft capacity. (Engis Equipment Co.)

For more data circle No. 65 on postcard, p. 151

Surface Grinder

This "center column" automatic surface grinder has an 80-in. OD work table. It uses three grinding wheel spindles. Each wheel maintains its correct height via a new "finger-type" feed control caliper. Work table is nonmagnetic; all parts are held in fixtures during grinding. Work being handled must



lie between two concentric circles 48- x 80-in. diam. Table size is 48-in. ID x 80-in. OD. Wheels are: 18-in. cylinder, 22-in. segment. Feed may be manual or power. Rapid raising or lowering of wheelheads is by power. Motors are 25, 30 or 40 hp on each spindle; 3 hp for the table. Floor space is 7 ft 8 in. x 8 ft 2 in. Weight, net is 40,000 lb. (Blanchard Machine Co.)

For more data circle No. 66 on postcard, p. 151

Spring Coiler

An automatic spring coiler produces a wide variety of springs with round wire without any special

equipment or arbors. There's no limit on the length of wire it can handle. Simple adjustments on the face of the machine allow for pitch, diameter, and length of spring. These can be made in a matter of seconds. Right-hand or left-hand springs may be coiled with standard equipment. (Perkins Machine & Gear Co.)

For more data circle No. 67 on postcard, p. 151

Cutting Wheels

Diamond cutting wheels made by a new method to close tolerances are very thin in size. The new wheels are used to slice and dice germanium and silicon crystal. They can also cut new high-temperature steels and alloys. (DoAll Co.)

For more data circle No. 68 on postcard, p. 151

Nail Producer

Capable of making nails at high speed, a new machine turns out more than 750 uniform nails a minute, up to 3½-in. long. Because distance between cutters and grippers is constant, nail length is always the same. There's no uneven feeding to result in varying lengths. It can use long-wearing carbide tools with no chance of shattering. (E. W. Bliss Co.)

For more data circle No. 69 on postcard, p. 151

Round Broaches

Used in arbor or hydraulic presses, new push-type round broaches finish to exact size in one pass. They come in 13 sizes (for ¼ to 1-in. round holes). (The duMont Corp.)

For more data circle No. 70 on postcard, p. 151

Two-color Marker

A two-color marking head features independent feed adjustment for each of two different roll-leaf colors. For use in pneumatic power hot stamping presses, it adapts to other type hot stamping presses, too. This head incorporates the two-color roll-leaf holder, guide, dual feed roll and adjustments, complete in one unit. Each roll-leaf feed sets

LOOK WHAT HAPPENS

when you

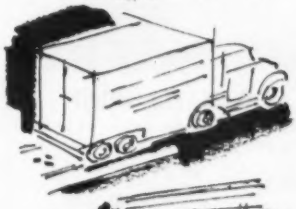
Call Cambridge

for

INDUSTRIAL WIRE CLOTH AND SCREEN

Bulk or Fabricated Parts

INQUIRIES ARE ANSWERED PROMPTLY—Whenever you call or write for information on prices, availabilities or service, you get a prompt reply.



DELIVERIES ARE MADE ON TIME—Orders for the most frequently used types of wire cloth are promptly filled. If we can't supply what you want from our complete stock, we'll schedule our looms to get it to you as soon as possible.

INSTALLATIONS ARE CHECKED—At Cambridge, orders aren't filled and forgotten. Our own sales engineers follow up your order to make sure our product is giving you the best possible service.

QUALITY, OF COURSE—Individual loom operation and countless checks on mesh size and mesh count assure you of highest quality wire cloth when you specify Cambridge.

Let us quote on your bulk or fabricated wire cloth needs. Samples for inspection or test purposes are available upon request. Call your Cambridge FIELD ENGINEER. He's listed in the phone book under "Wire Cloth." Or, write direct for FREE 94-PAGE CATALOG and stock list giving full range of wire cloth available. Describes fabrication facilities and gives useful metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL-MESH CONVEYOR BELTS | WIRE CLOTH FABRICATIONS

Department A, Cambridge 12, Maryland

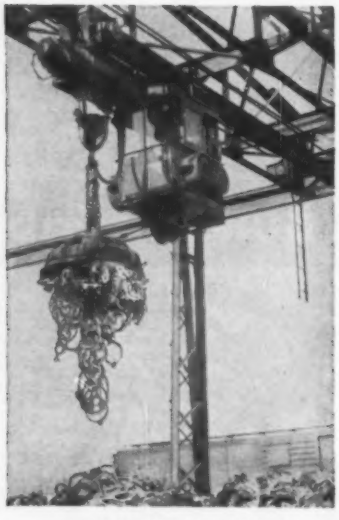
OFFICES IN PRINCIPAL INDUSTRIAL CITIES

SHEPARD NILES
HOISTS

CUT HANDLING COSTS

in YOUR plant with the right hoist

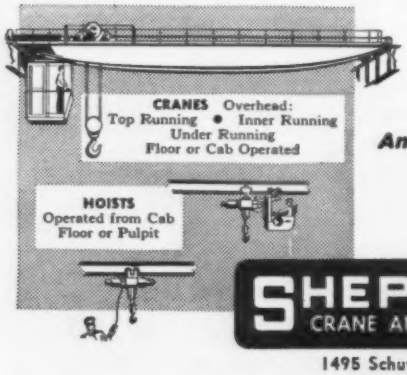
FLOOR-OPERATED HOIST
Operator primarily occupied with other duties, uses hoist for fast, efficient short hauls.



CAB-OPERATED HOIST
Cab operator moves loads at high speeds, can quickly spot material for handling.

WHICH Shepard Niles hoist fits your plant's needs . . . a floor-operated hoist where the operator is freed for other duties or a cab-operated hoist where the operator is engaged full time moving loads through the air? Shepard Niles manufactures both types in capacities from 1 to 20 tons.

Send for the descriptive bulletins on both Cab and Floor Operated Hoists . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



Building
America's Most Complete Line of Cranes and Hoists Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION
1495 Schuyler Ave., Montour Falls, N. Y.

independently, with a 4-in press stroke. Maximum feed on one advance is 6 in.; the other advance is 8 in. Roll-leaf up to 7-in. wide is possible for a single color, or two-color rolls totalling 7-in wide may be used. Maximum die area is 7 x 8 in. when using a solid engraved die. In addition to multi-

color application, the dual feed can cut costs on single color copy where a portion of such copy requires a slight pull and the bulk of the copy requires a much longer pull of the roll-leaf. The head uses interchangeable cartridge heaters totalling 660-w for 115-v, capable of delivering temperatures up to 550°F. (The Acromark Co.)

For more data circle No. 71 on postcard, p. 151

Spectro Sample

A new standard sample of zinc spelter's composition is modified by addition of 0.5 pct aluminum. This is necessary for minimizing the introduction of iron during melting. Analyzed for 16 elements and certified for eight, the spelter standard is intended for checking and calibrating spectrochemical and chemical methods used in analyzing high-purity zinc, spelter, and wrought zinc alloys. (National Bureau of Standards).

For more data circle No. 72 on postcard, p. 151

Floating Plate

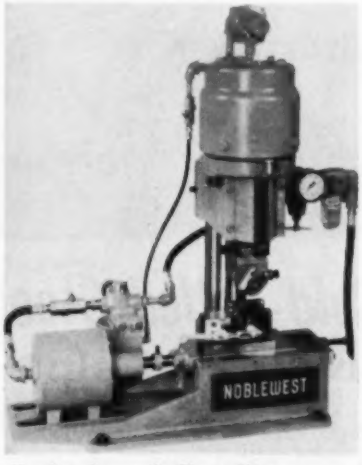
Easy one hand control of a new "floating plate" is provided by a special handle feature. Using it,

heavy jigs and parts can easily be moved across horizontal surfaces with only a few ounces of pressure. A cushion of air floats this plate a few thousandths of an inch above the table it moves upon until properly positioned. Air escaping from the sides of the plate keeps the table free of chips in the path of movement. Releasing the valve removes the air pressure, thus allowing the plate to rest firmly on the table for machining under rigid conditions. (Centerline Engineering Co.)

For more data circle No. 73 on postcard, p. 151

Metal Marker

An all-pneumatic, bench model, marking machine permanently marks steel, brass, aluminum and other metals. Equipped with an air-operated die head, the machine uses roll marking dies for flat work, flat marking dies for round work. The



die head vertically adjusts on a round column. Gap can be varied for small or large parts. Marking head has a pressure stroke variable up to 1 in. The work slide adjusts for length of mark up to 2 ½ in. Plant airline supply of 75 psi is sufficient to run it. (Noble & Westbrook Mfg. Co.)

For more data circle No. 74 on postcard, p. 151

Tiny Wrenches

Two new 15° and 75° angle opening miniature wrenches are drop-forged of alloy steel. Carefully heat treated, they're chrome plate finished. These tools fill out a selection of 11 other similar wrenches in various sized openings from 3/16 to ⅝ in. One of the new ones has 9/16-in. openings; the other, ⅝-in. openings. Both are

5½-in. over-all length, with heads 3/16-in. thick. (Armstrong Bros. Tool Co.)

For more data circle No. 75 on postcard, p. 151

Rubber-Lined Pumps

A major pump maker has extended the capacity range of its rubber-lined pumps. Now available is a new 14 x 12-in. unit. The new pump is designed for heads up to 140 feet at 870 rpm, capacities to 8000 gpm. Such pumps successfully handling abrasive, fine-mesh material ¼ in. round to 325 mesh. (Allis-Chalmers Mfg. Co.)

For more data circle No. 76 on postcard, p. 151

Metal Stamping Facilities by Lansing

at your Service for...

ELECTRICAL EQUIPMENT
HOUSEHOLD APPLIANCES
TRANSPORTATION EQUIPMENT
INDUSTRIAL EQUIPMENT
FARM IMPLEMENTS

Lansing Stamping Co.
ESTABLISHED 1914
LANSING 4 MICHIGAN

ARMSTRONG
SET-UP and HOLD-DOWN TOOLS

ARMSTRONG Set-up and Hold-down Tools reduce setting-up time—keep men and machines producing. Designed for use on planers, drill presses, milling machines, etc., they hold work securely and rigidly, and thereby reduce spoilage and prevent costly accidents. Your local Armstrong Distributor carries ARMSTRONG Set-up and Hold-down Tools in stock in sizes for every operation. Stop haphazard setting-up methods. Provide each of your machines with a full complement of ARMSTRONG Set-up and Hold-down Tools.

Write for Circular

ARMSTRONG BROS. TOOL CO.

5209 W. Armstrong Ave.
Chicago 46, U.S.A.

No matter what you make from Cold Rolled Steel

An ALAN WOOD Representative can help!

If you produce this gadget . . . housewives will love you. Your market would be endless. But there would be problems about the kind of steel to use. Better call your A.W. Representative. Your A.W. Representative may order a metallurgical study of your problems and bring about savings that build new profits and increased production. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

ALAN WOOD STEEL COMPANY

steelmasters for more than a century and a quarter • CONSHOHOCKEN, PA.

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia
New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati
Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul
San Francisco • Seattle

Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS
"Swede" *pig iron*

STEEL PRODUCTS
Plates (sheared)
A.W. Dynalloy (high strength steel)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

The Iron Age Summary

Steel Market Has More Punch

Mills say they're getting more orders from a greater variety of steel users.

Automotive is prodding the market with rush orders for December delivery.

■ The steel market has a lot more zip this week. Steel order volume is heavier and more steel users are coming into the market. But the main support is from automotive, which has been prodding the market with rush orders for December delivery.

The auto companies are going full speed ahead to make up for output lost due to strikes. At the same time, new model sales are going so well that Detroit may have to maintain full production for some time to come.

Buyers Order Ahead—The market improvement is prompting more steel buyers to place orders farther ahead. The mills are still getting plenty of rush orders, but they're becoming harder to fill. So steel users are keeping closer tabs on their inventories.

Inventory rebuilding is not a strong factor in the market at present. But it will become a major stimulus after the turn of the year. The volume of orders for January delivery is good.

Market Support — The lion's share of current market support is coming from users of cold-rolled sheets, galvanized sheets, terne plate (used in making auto gas tanks), and aluminum-coated sheets. Demand for plate, structurals, oil well casing and tubing, and line-pipe has improved some, but not enough to be of much help to the market. These products are expected to pick up still further in the first half of 1959.

But despite growing market strength, steel buyers are still in the driver's seat for the most part. The mills have plenty of capacity to handle even a major upturn in demand. Delivery promises may stretch out somewhat, but there's still enough steel to go around.

1959 Outlook—If a supply pinch develops at all next year it will come in the second quarter. At that time steel users will be building inventories as a hedge against a possible strike when steel labor contracts expire on June 30.

Mills in Chicago, Detroit, and St. Louis are doing much better than producers in other areas of the country. This is natural due to the great concentration of metalworking plants in those areas, particularly those in the consumer field, such as automotive. One Chicago mill is even building up stocks of ingots and semi-finished shapes in expectation of a first quarter influx of orders.

East Lags—Producers in the East and Southeast have been slower to come back. They probably will continue to lag until steel buyers are forced to reach out to mills beyond their normal buying area in order to get the delivery they need.

Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
Production (Net tons, 000 omitted)	2,025	1,998	2,011	1,831
Ingot Index (1947-1949 = 100)	125.1	124.3	125.1	113.9
Operating Rates				
Chicago	85.0	85.0*	86.0	71.5
Pittsburgh	70.0	67.0*	69.0	75.0
Philadelphia	68.0	72.0*	70.0	87.5
Valley	54.0	54.5*	60.5	66.0
West	82.5	83.0*	82.5	80.0
Cleveland	74.0	71.0*	78.5	68.5
Buffalo	66.0	68.0*	76.0	63.5
Detroit	94.0	94.0*	80.0	87.0
South	62.5	60.5	60.0	61.5
South Ohio River	79.0	85.0*	85.0	76.0
Upper Ohio River	80.0	82.5*	86.0	62.5
St. Louis	90.0	91.0*	94.0	76.0
Aggregate	74.5	74.0	74.5	71.5

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.42
Scrap, No. 1 hvy (Gross ton)	$40.17	$40.50	$42.83	$32.00
No. 2 bundles	$28.33	$29.00	$29.50	$24.00
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	29.00	29.00	29.00	27.00
Lead, St. Louis	12.80	12.80	12.80	12.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	99.25	99.125*	97.75	90.25
Zinc, E. St. Louis	11.50	11.50	11.00	10.00

Why AS&W Centralized Buying

Cost-saving through integrated data processing played key role in American Steel & Wire shift.

Company believes new system will allow more time for market evaluation.

▪ Integrated data processing played a key role in American Steel & Wire's decision to centralize major purchasing in Cleveland. Requisition processing time will be cut by about 40 pct when the $35,000 system is in operation.

AS&W is closing district buying offices in Chicago, N. Chicago, and Worcester, Mass. Buyers familiar with the requirements of 15 plants in seven areas are being transferred to Cleveland.

Economies Cited—"We believe the move will permit us to take greater advantage of the economics inherent in standardization of purchasing," says Roger W. Berrett, AS&W director of purchases. "It will allow us to make full use of mechanized data processing machinery. And the larger concentration of experienced personnel will enable us to intensify the training of the younger men in the department."

With centralized buying of an item like electrical equipment, for example, a single buyer at headquarters can handle all requirements where three district men have been handling it. Buyers will be able to stick to their product specialties. In addition, specialists will be in a better position to gage market trends. They can also more easily accumulate requirements of scattered plants for quantity buying.

Market Angle—Local buyers will continue to handle routine smaller orders and do liaison work. At Worcester, a purchasing representative will continue to buy production materials for electrical wire and cable. Plants of the Cyclone Fence Dept. will also be included in the new setup.

"A combination of a centralized staff and continuing local contacts will permit us to continually evaluate the market conditions and opportunities," says Mr. Berrett. "And we can also fit it in better with the overall corporation buying and save a lot of waste motion in the process.

Local Buying Policy—"Our past policy of buying many of the commodities we require to operate our business from suppliers adjacent to mill locations will continue to be adhered to," he said.

To get the new integrated data processing system going, three specialists from purchasing and accounting under the supervision of R. E. Johnson, purchasing research engineer, will devote full time to it for about 18 months. It will be generally patterned after similar systems in use at Columbia-Geneva Div. and Oliver Iron Mining Div.

How It Works—Requisitions will be standardized on punched cards and tape so that only the variables need be typed in manually. This is where processing time will be saved since the division handles about 150,000 requisitions a year for 25,000 items. Acknowledgments of orders from vendors, notice of shipping dates and similar routine paperwork will be forwarded to plants. Requisitions will originate in branch plants and will be mailed to the Cleveland center for processing, where the tape will be punched.

Behind AS&W's Decision

Costs

Processing time of requisitions will be cut approximately 40 pct through standardization and integrated data processing system.

Personnel

"The larger concentration of experienced personnel will enable us to intensify the training of the younger men in the department."

Markets

"Specialists will be in a better position to gage market trends. They can also more easily accumulate requirements of scattered plants for quantity buying."

Suppliers

"A single call at Cleveland headquarters will cover a number of plants and permit grouping of orders. Processing will also be materially speeded up."

Company Policy

"Our past policy of buying many of the commodities we require . . . from suppliers adjacent to mill locations will continue . . ."

Here's the finest hook-on bucket you can get—with extra

BUCKET STAMINA
LOAD CAPACITY
DIGGING POWER

Foundries, steel mills, power plants — all acclaim this Hayward Electric Clam-Shell as the finest hook-on bucket obtainable. Handles extra large loads safely. Notable for giving many years' service with minimum maintenance. Interchangeable with your electric magnet. The Hayward Company, 50 Church St., New York 7, N. Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

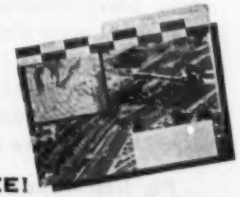
famous for performance since 1888

WANTED

Production machining on a job or long-term basis . . . . . contracts for precision components, assemblies and complete machine building.

1200 modern machine tools and one of the world's largest foundries, now available.

We welcome your inquiry or blueprints for quotation.



FREE!
New Facilities File • Write today!

CONTRACT DIVISION
Textile Machine Works, Dept. 171, Reading, Pa.

for *ANY* product it's more than just a *SURFACE* advantage

Masland Duran
CLAD
vinyl finish

Masland Duran CLAD used on Arvin phonograph

More than a finish! As an integral part of your product this versatile vinyl can provide a "built-in" sales advantage. It can be laminated permanently to metal. It can be formed, stamped, crimped, bent, shaped or drilled without impairing its textured look. No new equipment required. Durable and easy to keep clean. Mail coupon for samples.

Industrial Products Division
THE MASLAND DURALEATHER CO.
Dept. IA, Philadelphia 34, Pa.

THE MASLAND DURALEATHER CO., Dept. IA
Amber and Willard Sts., Philadelphia 34, Pa.

Please send folder and samples of Masland Duran Clad:

NAME_____ **TITLE**_____

COMPANY_____

STREET_____

CITY_____ **ZONE**_____ **STATE**_____

Buyers Still Resist Inventory Buildup

Steel users slowly lose interest in "hold-the-line" inventory policies.

But many are reluctant about increasing orders and allowing mills more lead time.

■ Slowly but surely steel users are changing their buying policy. As a group they still generally resist any impulse to build inventories. But they are getting away from the practice of ordering late for early delivery.

Mill customers, running into shipping delays on products like sheet, are changing their thinking. But it's a gradual change, avoided as long as possible.

"Our customers are trying to hold the inventory line," says a West Coast mill manager. "Right now they still tend only to fill in holes. They are marking time, at least until after the holiday season."

But on a nationwide basis the hold-the-line philosophy is dying out. Some steel users are no longer content to maintain a 30-day inventory. They are boosting orders to build up a 60-or 90-day supply. Buyers are fattening their monthly orders by a few tons. And there's growing interest in getting tonnages for the first quarter on mill books.

While first quarter ordering is increasing in many markets it's strongest in the Chicago area. Buyers there are placing substantial sheet, plate, bar and structural orders for early 1959 delivery.

Sheet and Strip—After a slight faltering in early November, the sheet market has again firmed up. Mills say the order improvement came in the last two weeks. As it now stands here's the sheet production pattern for many mills through January: Final November production figures will show a dip from October levels. December will be better than November. And January should bring a further improvement over December.

Automotive sheet and strip suppliers say auto companies are now entering extra, "push - in" orders, trying for December delivery. In some cases the steel will be shipped as requested. In others, delivery can't be made until January. January steel orders now in from the automakers are about on a par with those of October.

Long terne, galvanized, and aluminized sheet demand is pushing mills to capacity levels.

Bar—Mill delivery estimates are stretching out a bit as customer orders increase. In general, mills must now fill orders from rollings rather than out of accumulated stock. But shipments are still good. With a little shopping around most buyers can get delivery when needed. **West Coast** mills say automotive bar demand is up as Farwest auto assembly plants increase production. Rebar demand is easing off.

Plate and Structurals — Plate mills on the **East Coast** and at **Pittsburgh** still have plenty of open rolling time. But demand for wide, heavy plate is strong farther west. In the **Chicago** area, plate deliveries are stretching out. Buyers are already placing first quarter tonnages.

Japanese plate imports—both in heavy and light gages—are attracting a lot of interest along the **East Coast** (see story on p. 93). U. S. plate producers say Japanese heavy plate sells for $20-$30 a ton below domestic prices.

Demand for structurals is still lagging in most areas. Again the **Chicago** market is the exception. First quarter orders are already coming from structural buyers there. One mill is sold out on all sizes through mid-January.

Pipe and Tubing—Sales of standard pipe and oil country seamless are inching up, but there's still no steam behind the market. Oil producers have apparently reached the end of inventory cuts. However, they still show no great interest in building up pipe stocks. They can still count on getting fast delivery out of mill downriver depots.

Seamless pipe mills are still operating without backlogs, producing against day - to - day orders. Often buyers can match mills against each other to get fast delivery.

Tinplate—Mill shipments are expected to move up sharply in January. Right now they are slow. As a result tinplate producers are encouraging buyers to do some December ordering. Canmakers now hold heavy inventories, but probably won't delay their first half buying. The reason: They must keep cans flowing to packers on time and can't wait for tinplate delayed by a possible steel strike in mid-summer.

Pig Iron — Steel foundries have not shown as much pickup as have gray iron and malleable foundries. Because of this pig iron demand from steel founders is still depressed.

PURCHASING AGENT'S CHECKLIST

Why demand for ductile iron is increasing. **P. 89**

Steel imports spread out to include more products. **P. 93**

Trend to "containerization" brings demand for more giant-sized metal containers. **P. 94**

COMPARISON OF PRICES

(Effective Dec. 1, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Dec. 1 1958	Nov. 24 1958	Nov. 4 1958	Dec. 3 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) coke	$10.65	$10.65	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.00	9.00
Special coated mfg. ternes	9.90	9.90	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	Dec. 1 1958	Nov. 24 1958	Nov. 4 1958	Dec. 3 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.51
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb.‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	*$42.50*	$44.50	$45.50	$32.50
No. 1 steel, Phila. area	*$4.50*	35.50	39.50	33.00
No. 1 steel, Chicago	43.50	42.50	43.50	30.50
No. 1 bundles, Detroit	*$4.00*	36.50	36.50	21.50
Low phos., Youngstown	*$5.50*	45.50	47.50	32.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	50.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	50.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	40.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	*$40.17*	$40.50	$42.83	$32.00
No. 2 bundles	*$8.33*	29.00	29.50	24.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$14.50	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$18-18.50	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.00	29.00	29.00	27.00
Copper, Lake, Conn.	29.00	29.00	29.00	27.00
Tin, Straits, N. Y.	99.25	99.125*	97.75	90.25
Zinc, East St. Louis	11.50	11.50	11.00	10.00
Lead, St. Louis	12.80	12.80	12.80	12.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scraps delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices at a Glance 171
Comparison of Prices 175
Bars 186
Billets, Blooms and Slabs 184
Boiler Tubes 188
Bolts, Nuts, Rivets, Screws 190
Clad Steel 188
Coke 188
Electrical Sheets 188
Electrodes 188
Electroplating Supplies 190
Iron Ore 188
Merchant Wire Products 188
Metal Powders 190
Nonferrous
- Mill Products 182
- Primary Prices 171, 180-182
- Remelted Metals 182
- Scrap 182

Pig Iron 191
Piling 184
Pipe and Tubing 187
Plates 186
Rails 188
Refractories 188
Service Center Prices 190
Shapes 184
Sheets 185
Spring Steel 188
Stainless 191
Steel Scrap 178
Strip 184
Structurals 184
Tinplate 185
Tool Steel 188
Track Supplies 188
Water Pipe Index 190
Wire 186
Wire Rod 185

DYSON LARGE FORGED NUTS

1¾" thru 8" BOLT DIAMETER

- Regular, high tensile and stainless steels
- Heavy, regular, full, half, jam, sleeve, specials, etc.
- Modern machining and heat treating facilities
- Complete testing equipment
- Adequate steel stocks assure prompt delivery

Joseph DYSON & SONS, INC.

5125 St. Clair Avenue, Cleveland 3, Ohio, Telephone: HEnderson 1-6157

SEND FOR THE DYSON LARGE NUT CATALOG. 36-page catalog contains dimensions, specifications and prices on Dyson large forged nuts, plus data on large eye bars, bolts and studs.

Our Specialty LARGE NUTS BOLTS STUDS EYE BARS

Mill Demand Weak, Prices Drop

In most districts, December prospects for the scrap trade look glum.

Still lower prices are in the wind. Only Chicago shows signs of strength.

▪ Openhearth scrap prices are sliding downhill and bottom apparently has not yet been reached.

With the exception of Chicago and Detroit, mill demand for scrap is weak. Little hope is held for any significant orders for the remainder of December.

But what is happening in Chicago today may be the forerunner of a general upturn in the market next month. Mill operating rates there have risen sharply. Demand for scrap, although not rising as sharply as mill activity, was still strong enough to bring a $1 boost in openhearth grades.

Activity in Detroit is picking up, but a flood of industrial scrap from the auto plants is drowning out the dealer market. Consequently, scrap prices in Detroit took a nosedive. This could also be a foretaste of things to come in other markets as the level of industrial production rises.

In the overall picture, the strength in Chicago was not enough to offset declines in Philadelphia and Pittsburgh, and The IRON AGE No. 1 heavy melting Composite Price dropped 33¢ to $40.17.

Pittsburgh — Lack of demand continues to weaken the market. No. 1 factory bundles are off $1 from last week and more than $4 from last month. Local mills showed little interest in the latest list. No. 1 heavy melting is down $1 as a nearby mill dropped its price. No. 2 bundles are going for $32, down $1 from last week. One mill dropped its price for No. 2 heavy melting but $36 is still being paid by another consumer.

Chicago — Volume continues at slightly higher levels. No. 1 heavy melting and No. 1 dealer bundles are up $1 to $43-$44. The mild pickup is being followed by further stiffening in dealer resistance. Onset of cold weather plus a drop in scrap collections from strike-bound industries have encouraged dealers to hold out for higher prices. A 50¢ gain in factory bundles for December delivery is contributing to the strength.

Philadelphia—This market is almost at a standstill. One mill bought a small amount of openhearth scrap at $1 under quoted prices, dropping No. 1 heavy melting to $34-$35 and No. 2 heavy melting to $31-$32.

New York—This market remains inactive. Little improvement is expected until Jan. 1. Mixed yard cast and heavy breakable cast fell $2 on the basis of small buying by foundries in adjacent districts.

Detroit—There's enough scrap in the district for everyone, with plenty left over. Automotive plants are virtually swamping steel mills with scrap, thereby flooding out dealers. Industrial lists are down nearly $3 from last month. Absence of dealer orders brought a $1 to $2.50 drop in their prices.

Cleveland — Valley and local markets settled another $2 with the only activity centering around production lists. These were sold in the Valley at about $44. Some distress tonnage is still coming in from the East in small quantities at $42. Smaller mills are taking advantage of low prices to lay in scrap in case bigger mills jump in next month.

St. Louis — A leading mill reduced its prices for No. 1 and No. 2 heavy melting, No. 2 bundles, and railroad specialties. Other prices are unchanged. Season's first cold wave is expected to reduce yard intake.

Birmingham—The market continues slow but some consumers indicate they may buy early this month. For the most part, these purchases should be limited to needs for the month, and they probably will be made at lower prices. Brokers have lowered their quotations.

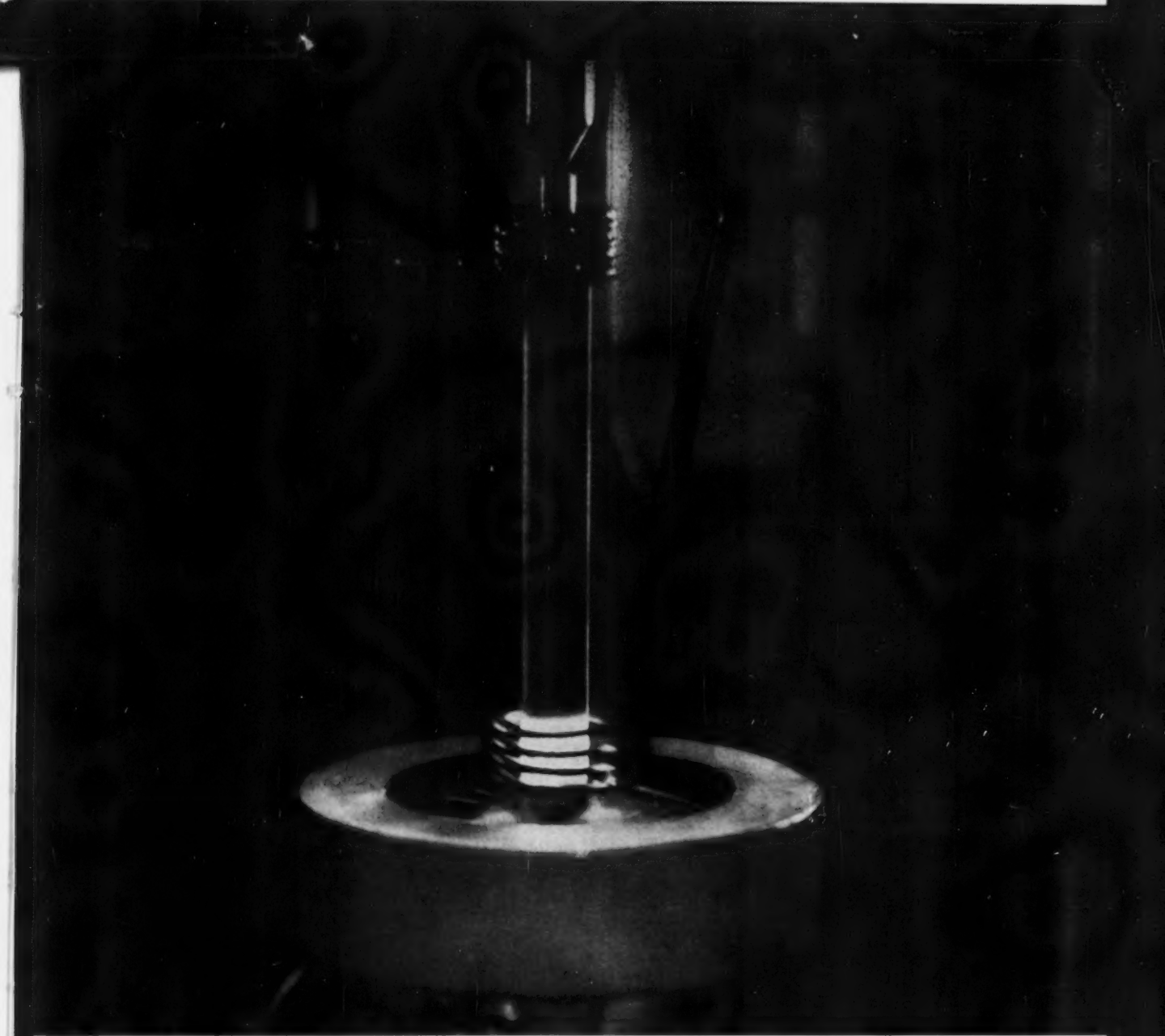
Cincinnati—Market is down $2 on broker buying prices for the month. Area mills will take scrap but are not pushing for it. Dealers selling at lower prices, are fearful of sources drying up.

Buffalo—This market is quiet. Small sales of steelmaking grades expected this week will probably be at lower prices. General feeling is that a $2 drop is warranted.

Boston — Primary steel making grades plunged $4 as the bottom dropped out of the market. Most other grades dropped $1 to $3. There is no market for No. 2 bundles.

West Coast—While scrap flow is slow, it's adequate to accommodate sluggish demand. Export orders just received will have a steadying effect.

Houston—Prices of steelmaking grades are off $1 in a weak market. Scrap inventories are large and a big price break may be coming. The district mill and most foundries are not buying and show little interest. There is no export in sight.



Ketos shaft being induction hardened to Rockwell 55-56, while ends remain soft for final machining. Photographed at Control Instrument Co., Inc., Brooklyn, N. Y.

KETOS has wide hardening range with minimum volume change...

Ketos is a low priced alloy tool steel that can be hardened from low temperatures with practically no volume change. It has deep hardening qualities, and a fine grained structure, that make it desirable for many production parts.

That's why nondeforming Ketos is well suited not only for most tool steel applications such as gauges, dies, and taps but also for close-tolerance, wear-resistant parts like the actuator bar shown in the induction heating unit above. The thin contact edges of this particuiar part withstood a "life test" of over 4-million high speed blows. No other steel tested lasted more than 1-million cycles before it chipped and failed.

If Ketos sounds like the steel you should be using, call your nearby Crucible warehouse. Stocks of Ketos and dozens of other special tool steels are large, delivery fast. *Crucible Steel Company of America, Dept. TL06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

SCRAP PRICES *(Effective Dec. 1, 1958)*

Pittsburgh

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 dealer bundles	42.00 to 43.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	21.00 to 22.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. punch'gs plate	48.00 to 49.00
Heavy turnings	36.00 to 37.00
No. 1 RR hvy. melting	45.00 to 46.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	51.00 to 52.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	48.50 to 49.50
No. 2 bundles	31.00 to 32.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	23.00 to 24.00
Low phos. forge crops	52.00 to 53.00
Low phos. punch'gs plate	48.00 to 49.00
Low phos. 3 ft and under	46.00 to 47.00
No. 1 RR hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	52.00 to 53.00
Rerolling rails	63.00 to 64.00
Rails 2 ft and under	59.00 to 60.00
Angles and splice bars	54.00 to 55.00
RR steel car axles	71.00 to 72.00
RR couplers and knuckles	51.00 to 52.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	41.00 to 42.00
Cast iron wheels	42.00 to 43.00
Malleable	56.00 to 57.00
Stove plate	44.00 to 45.00
Steel car wheels	52.00 to 53.00
Stainless	
18-8 bundles and solids	220.00 to 225.00
18-8 turnings	130.00 to 135.00
430 bundles and solids	115.00 to 120.00
430 turnings	65.00 to 70.00

Philadelphia Area

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	34.00 to 35.00
No. 2 bundles	21.50 to 22.50
No. 1 busheling	35.00 to 36.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	32.00 to 33.00
Low phos. 5 ft and under	38.00 to 39.00
Low phos. 2 ft, punch'gs	39.00 to 40.00
Elec. furnace bundles	37.00 to 38.00
Heavy turnings	32.00 to 33.00
RR specialties	43.00 to 44.00
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.50 to $36.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	24.00 to 25.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	19.00 to 20.00
Low phos. 18 in. and under	45.00 to 46.00
Rails, random length	49.00 to 50.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	39.00 to 40.00
Drop broken cast.	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	19.50 to 20.50
Shoveling turnings	19.50 to 20.50
Low phos. plate	43.00 to 44.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$37.50 to $38.50
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	37.50 to 38.50
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	25.50 to 26.50
No. 1 busheling	37.50 to 38.50
Machine shop turn.	15.50 to 16.50
Mixed bor. and turn.	20.50 to 21.50
Shoveling turnings	20.50 to 21.50
Cast iron borings	20.50 to 21.50
Cut structural & plates, 2 ft & under	46.50 to 47.50
Drop forge flashings	37.50 to 38.50
Low phos. punch'gs plate	38.50 to 39.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast.	50.00 to 51.00
No. 1 machinery cast.	49.00 to 50.00
Stove plate	45.00 to 46.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	215.00 to 220.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 busheling	34.00 to 35.00
No. 1 dealer bundles	34.00 to 35.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	28.00 to 29.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	22.00 to 23.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
RR specialties	46.00 to 47.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Rerolling rails	59.00 to 60.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	23.00 to 24.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar crops and plate	43.00 to 44.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	44.00 to 45.00
Rails, 18 in. and under	49.00 to 50.00
Angles and splice bars	45.00 to 46.00
Rerolling rails	54.00 to 55.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	53.00 to 54.00
Cast iron car wheels	42.00 to 43.00
Unstripped motor blocks	41.00 to 42.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	23.00 to 24.00
No. 2 dealer bundles	17.00 to 18.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean chem. cast. borings	25.00 to 26.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	34.00 to 35.00
Heavy breakable cast.	32.00 to 33.00
Stainless	
18-8 prepared solids	185.00 to 190.00
18-8 turnings	80.00 to 85.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.50 to $32.50
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	33.50 to 34.50
No. 2 bundles	20.00 to 21.00
No. 1 busheling	31.50 to 32.50
Drop forge flashings	29.50 to 30.50
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	33.00 to 34.00
Mixed cupola cast.	41.00 to 42.00
Automotive cast.	45.00 to 46.00
Stainless	
18-8 bundles and solids	205.00 to 210.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 dealer bundles	25.00 to 26.00
No. 2 bundles	13.00 to 14.00
No. 1 busheling	25.00 to 26.00
Machine shop turn.	7.00 to 8.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	19.00 to 20.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	31.00 to 32.00
Heavy breakable cast.	29.00 to 30.00
Stove plate	30.00 to 31.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	32.00
No. 1 dealer bundles	30.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn. 1 ft and under (foundry)	45.00
No. 1 cupola cast.	$44.00 to 45.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 coupla cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

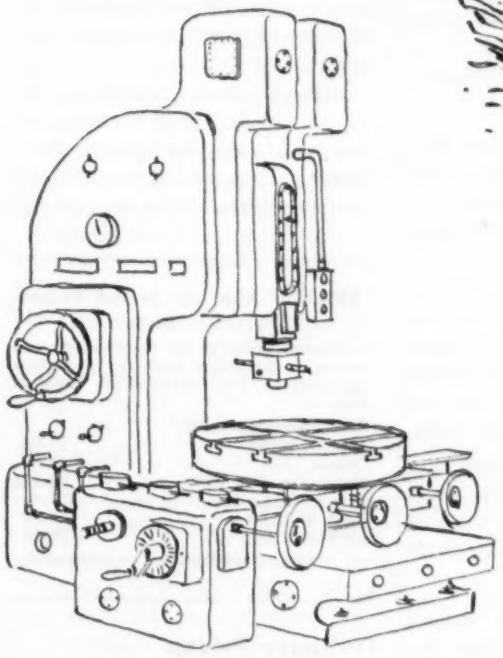
No. 1 hvy. melting	$34.50
No. 2 hvy. melting	30.50
No. 1 dealer bundles	34.50
No. 2 bundles	25.00
Mixed steel scrap	26.50
Bush., new fact., prep'd.	34.50
Bush., new fact., unprep'd	28.50
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$39.00 to 41.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$39.00
No. 2 hvy. melting	33.00
No. 2 bundles	24.00
Machine shop turn.	17.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$44.00 to 45.00
Unstripped motor blocks	36.00 to 37.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	30.00 to 31.00

dawn of automation



Some time during the beginning of civilization came the potter's wheel, ancestor of the machine tool. But modern development came in 1840 when Sir Joseph Whitworth, the English inventor, succeeded in producing plane surfaces with a very high degree of precision—an achievement that formed the groundwork for many other of his developments in machine tools—and of importance in establishing machine shop practice.

Today, countless hand tools, machine tools, and the tools of automation depend upon iron and steel as indispensable ingredients.

For these and the thousands of other demands on the industry's facilities, a flow of scrap to the mills must be continuously maintained.

For the purchase or sale of iron or steel scrap . . .

phone or write "Your Chicago Broker"

M. S. KAPLAN COMPANY

231 S. La Salle St., Chicago

Telephone ANdover 3-3900

Alcoa and Reynolds Are Active Abroad

They are now vying for control of a British producer.

Alcoa seems to have the inside track, but this would make them and Reynolds partners.

Both have other interests overseas.

■ There's a better than even chance that two head-on competitors in U. S. aluminum markets will become partners in an overseas operation.

British Aluminium Co., Ltd., has agreed to let Aluminum Co. of America buy all 4.5 million authorized but unissued shares of its common stock. The purchase would be spread over several years. Alcoa would acquire stock as British Aluminium needs capital.

Needs Approval—The deal is not official until is is approved by the British Chancellor of the Exchequer. This is likely, but not a sure thing. The contract would give Alcoa effective control of the British firm eventually with one-third of its stock. Several British newspapers have actively come out against selling out to American control.

Reynolds Metals Co. with its British partner, Tube Investments Ltd., have bid on the 9 million outstanding shares of British Aluminium stock. Although Reynolds and Tube Investment are apparently interested in different shares than Alcoa, the two offers are incompatible since Reynolds insists on no additional sales of stock. Right now the Reynolds-Tube Investment offer is the dark horse.

But Reynolds and Tube Investment together own 900,000 shares of British Aluminium and would actually be Alcoa's partner if the Alcoa-British Aluminium agreement is approved.

Object—British Aluminium Co., Ltd., is an integrated producer with a capacity of about 140,000 tons, and mill facilities to fabricate about this much metal.

While the actual transaction is news to the trade, the fact that one should be contemplated or made should not be. This merely throws the spotlight on a trend that has been developing for several years.

Both Reynolds and Alcoa have been quietly surveying the world aluminum market during the last couple of years. Both have made previous moves overseas.

Reynolds Action — In August 1957 William Reynolds took the reins of Reynolds International, Inc. At that time this subsidiary had two plants in Colombia, one each in Canada, Mexico, and the Philippines, and two under construction in Cuba. Since then Reynolds International has acquired an interest in the aluminum facilities of Tube Investments Ltd., England. Together the two companies own a new producing and selling subsidiary.

In West Germany, Reynolds and Julius and August Erbsloeh set up a jointly owned aluminum manufacturing and sales company.

Reynolds also set up a wholly owned mining subsidiary in Australia, although it is plainly uneconomical to move bauxite or even alumina all the way across the Pacific with plenty of high grade ore holdings in the Caribbean.

Outlook—In December last year Richard S. Reynolds, president, defined Reynolds overseas position: "Our overseas opportunity lies in the immense gap between foreign and American consumption." According to Mr. Reynolds, average per capita consumption in the U. S. is 25 lb, while in second place, Great Britain's per capita consumption is only 16 lb. He says 88 pct of the world's aluminum consumption is concentrated in the U. S., Russia, and only five other countries.

Alcoa's recent activity in the U. K. can be traced to November last year when the British Metal Bulletin reported, "It is definitely established that Alcoa at least has

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in November based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	29.00
Copper, Lake	29.00
Straits Tin, New York	99.236
Zinc, E. St. Louis	11.42
Lead, St. Louis	12.80
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E).	29.00	27.50	10/23/58
Copper (CS)	29.00	19.50	11 26 58
Copper (L)	29.00	27.50	10/23/58
Lead, St. L.	12.80	12.30	10/14/58
Lead, N. Y.	13.00	12.50	10/14/58
Magnesium ingot	36.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/56
Titanium sponge	182-182	185 208	11/3/58
Zinc, E. St. L.	11.50	11 00	11/7/58
Zinc, N. Y.	12.00	11.50	11/7/58

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see next page; other primary prices, pg. 182.

been making offers to U. K. consumers . . ."

Alcoa Moves — In July 1958, John Mitchell was appointed president of Alcoa International, Inc. Prior to this the wholly-owned subsidiary had done little in the way of consequential expansion outside the U. S. since the company deemphasized this phase of its business in the '30s.

Pending now is a proposal made to the Furakawa Electric Corp., Tokyo, that an aluminum company be formed in Japan with Alcoa as a minority partner.

Advantages — Favorable action would not only open up Far Eastern markets to Alcoa, but it would give it a trump card in meeting competition from Japanese imports.

The British move has several possible advantages. Initially, there is the proximity to a market with tremendous growth potential. Also, although Great Britain is not now a member of the European Common Market with its preferential tariffs for members, many observers feel they well may be in the future.

Copper

The market last week moved down, and sideways at the same time. And yet many observers feel it is now on firmer ground than it has been for several months.

Producers are holding firm at 29¢ per lb. They have the business to justify this, but probably not enough to boost prices this year.

Custom smelters recently dropped back to 29¢ per lb in three small cuts, from 30¢ per lb. But they had hit 30¢ because of temporary tightness caused by several strikes. The current price reflects little pressure outside normal copper consumption modified by the condition of consumers stocks.

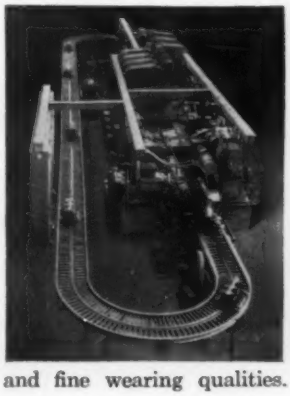
Tin prices for the week: Nov. 25—99.375; Nov. 26—99.50; Nov. 27 — holiday; Nov. 28 — 99.375; Dec. 1—99.25; Dec. 2—99.25.* *Estimate.

STEEL *from Wheelock, Lovejoy* BULLETIN

W-L DETROIT For the first time, HY-TEN D-2 air hardening steel now available here in rounds, squares, flats and billets. Also a fine stock of standard alloy grades, especially A-8620, as well as all HY-TEN grades. Excellent service from our new warehouse.

W-L CHICAGO Steady demand for "B" No. 3X for flame-hardened parts such as boring bars. Good stocks of HY-TEN AIS — the best carburizing alloy steel, and freest machining available today—a new W-L exclusive!

W-L CINCINNATI This 23-station Avey Line-O-Dex transfer machine, designed and built by The Avey Division of Motch & Merryweather Machinery Co., Cincinnati, Ohio, is equipped with spindles made of our HY-TEN "B" No. 2. This grade was chosen for its great tensile strength (100,000 P. S. I. in the natural condition), toughness, and fine wearing qualities.



W-L CAMBRIDGE We are now distributing FLEXANGLE, the easy-to-erect structure assembly for all types of racks, shelves, platforms, etc. It's completely universal and low in cost — can be used anywhere, by anyone, for any storage purpose.

W-L HILLSIDE Our stock of flat and square sizes in HY-TEN M Temper Oil Hardening Steel can save you time and money in your tooling program. HY-TEN "B" No. 3X pre-heat treated in rounds, squares and flats available in a wide range of sizes. Billets on hand for hammer forging in all grades of HY-TEN.

W-L CLEVELAND Excellent stock of brake die flats and squares. Also many sizes up to 16" x 18" in HY-TEN Mold Steel. Excellent deliveries.

W-L BUFFALO A wide range of rounds and hexagons in cold drawn AISI leaded and non-leaded A-4140. Also many sizes of the new "B" No. 3X-40 in rounds and hexagons.

Write our Cambridge office today for your *free* Wheelock, Lovejoy Data Sheets. They'll give you complete technical information on grades, applications, physical properties, tests, heat treating, etc.

WHEELOCK, LOVEJOY & COMPANY, INC.

126 Sidney Street, Cambridge 39, Mass.

AMERICAN STEEL WAREHOUSE ASS'N

AGENTS: Southern Engineering Company, Charlotte, N. C.; Sanderson-Newcould, Ltd., Montreal & Toronto

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.822
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	53.13	.....	50.36	53.32
Brass, Yellow	46.57	47.11	46.51	49.98
Brass, Low	49.23	49.77	49.17	52.54
Brass, R L	50.17	50.71	50.11	53.48
Brass, Naval	51.24	.....	45.05	54.65
Muntz Metal	49.35	.....	44.66	.....
Comm. Bz.	51.65	52.19	51.59	54.71
Mang. Bz.	54.94	.....	48.64	.....
Phos. Bz. 5%	72.52	.....	73.09	.....

Free Cutting Brass Rod 31.22

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.10-$5.50; alloy, $5.10-$6.35; billets, HR, commercially pure, $3.80-$4.35; alloy, $3.80-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.45
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) ....$2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... $5.00 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ...$70 to $80
Lithium, 98% .....$11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York .....$226 to $230
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz...$15 to $17
Platinum, dollars per troy oz...$50 to $55
Rhodium .....$120.00 to $125.00
Silver ingots (¢ per troy oz.) 90.125
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 28.00
- No. 120 ..... 27.00
- No. 123 ..... 26.00

80-10-10 ingot
- No. 305 ..... 32.25
- No. 315 ..... 30.25

88-10-2 ingot
- No. 210 ..... 39.75
- No. 215 ..... 35.50
- No. 245 ..... 32.25

Yellow ingot
- No. 405 ..... 23.00

Manganese bronze
- No. 421 ..... 24.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.75-25.00
- 0.60 copper max. 24.50-24.75

Piston alloys (No. 122 type)..24.25-25.25
No. 12 alum. (No. 2 grade) ...21.50-22.00
108 alloy 23.00-23.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)...24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective Dec. 1, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	25	24¼
Yellow brass	19	17¼
Red brass	22½	21⅝
Comm. bronze	22⅞	22⅛
Mang. bronze	17¾	16⅞
Free cutting rod ends.	18¼	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	24¾
No. 2 copper wire	23¼
Light copper	21¼
*Refinery brass	23¼
Copper bearing material	21¾

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	24¾
No. 2 copper wire	23¼
Light copper	21¼
No. 1 composition	19½
No. 1 comp. turnings	19
Hvy. yellow brass solids	14
Brass pipe	16½
Radiators	16½

Aluminum

Mixed old cast.	12½—13¼
Mixed new clips	15½—16½
Mixed turnings, dry	13½—14½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	22½—23
No. 2 copper wire	20½—21
Light copper	18½—19
Auto radiators (unsweated)	13¾—14¼
No. 1 composition	17 —17½
No. 1 composition turnings	16 —16½
Cocks and faucets	14 —14½
Clean heavy yellow brass	12¾—13¾
Brass pipe	14 —14½
New soft brass clippings	14½—15
No. 1 brass rod turnings	13 —13½

Aluminum

Alum. pistons and struts	6 — 6½
Aluminum crankcases	10 —10½
1100 (2S) aluminum clippings	13 —13½
Old sheet and utensils	10 —10½
Borings and turnings	6½— 7
Industrial castings	10 —10½
2020 (24S) clippings	11¼—11¾

Zinc

New zinc clippings	4¾— 5¼
Old Zinc	3½— 3¾
Zinc routings	2¼— 2½
Old die cast scrap	2 — 2¼

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	30-32
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8 — 8¼
Battery plates (dry)	2¾— 3
Batteries, acid free	2½— 2¾

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixer common babbitt	9½—10
Solder joints	13⅛—13¾
Siphon tops	42
Small foundry type	10⅛—10¾
Monotype	10½—10¾
Lino. and stereotype	9½— 9¾
Electrotype	8½— 8¾
Hand picked type shells	6½— 7
Lino. and stereo. dross	2¾— 3
Electro dross	2⅛— 2⅛

Clean, sanitize, and Jenolize without fumes, flame, or excess water . . .

New All-Electric Hypressure Jenny!

Anywhere that flame, fumes, or excess water are objectionable or hazardous, the new Model E-350 All-Electric Jenny® will solve the cleaning or sanitizing problem. And with the new Jenolizing Process, machinery, equipment, and parts are left with a coating that protects against flash rusting, and gives a glossy, like-new appearance to painted surfaces.

Model E-350 combines the right amounts of heat, pressure, and cleaning solution to handle the majority of cleaning jobs at savings of up to 80% in time and labor costs. Its compact size, portability, low water output, and quiet operation without flame, smoke, or fuel fumes, make it ideal for use practically anywhere in the plant.

Send the coupon today for complete information. You'll welcome the outstanding performance of E-350—and the attractive plan which permits you to prove to yourself the economies of this new All-Electric Jenny.

Perfect for

manufacturing plants, food processors, textile mills, chemical and pharmaceutical plants, metal working and fabricating, petroleum industry, canneries, hotels and institutions, and every other operation where fumes, smoke, excess water are objectionable.

Mail Today!

Please send complete information on new E-350 All-Electric Jenny and Jenolizing.

Name ..... Title .....

Company .....

Address .....

City ..... Zone ..... State .....

hv

HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division, P. O. Box 23, Coraopolis, Pa.

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B1*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.60 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Dec. 1, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. *COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B1*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.275 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1*, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets.

(Effective Dec. 1, 1958)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.35 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Dec. 1, 1958) * Special Quality.

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*1.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*9.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*9.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*9.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

(Effective Dec. 1, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2

High-carbon chromium.. .955 D-3, D-5
Oil hardened manganese .505 O-2
Special carbon ..... .38 W-1
Extra carbon ..... .38 W-1
Regular carbon ..... .325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	15.35
Cleveland *R3*	.....	.....	.....	.....	.....	.....
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington *C16*	.....	6.50	.....	.....	.....	.....
Ind. Harbor *Y1*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

Furnace, beehive (f.o.b.) Net-Ton
Connellsville, Pa. $14.50
Foundry, beehive (f.o.b.) .$18.00 to $18.50
Foundry oven coke
Buffalo, del'd $31.75
Detroit, f.o.b. 30.50
New England, del'd 31.55
Kearney, N. J., f.o.b. 29.75
Philadelphia, f.o.b. 29.50
Swedeland, Pa., f.o.b. 29.50
Painesville, Ohio, f.o.b. 30.50
Erie, Pa., f.o.b. 30.50
Cleveland, del'd 32.65
Cincinnati, del'd 31.84
St. Paul, f.o.b. 29.75
St. Louis, f.o.b. 31.50
Birmingham, f.o.b. 28.85
Milwaukee, f.o.b. 30.50
Neville, Is., Pa. 29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R5*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100, 110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.... $185.00
High duty (except Salina, Pa., add $5.00) 140.00
Medium duty 125.00
Low duty (except Salina, Pa., add $2.00) 103.00
Ground fire clay, net ton, bulk... 22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. $158.00
Childs, Hays, Latrobe, Pa. 163.00
Chicago District 168.00
Western Utah 183.00
California 165.00
Super Duty
Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville 163.00-168.00
Silica cement, net ton, bulk, Latrobe 29.75
Silica cement, net ton, bulk, Chicago 26.75
Silica cement, net ton, bulk, Ensley, Ala. 27.75
Silica cement, net ton, bulk, Mt. Union 25.75
Silica cement, net ton, bulk, Utah and Calif. 39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.$109.00
Standard chemically bonded, Curtiner, Calif. 119.00
Burned, Balt. 103.00

Magnesite Brick

Standard, Baltimore $140.00
Chemically bonded, Baltimore 119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk. $73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.
in bulk 46.00
in sacks 52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:
Pa., W. Va., Ohio $16.75
Missouri Valley 15.00
Midwest 17.00

(Effective Dec. 1, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4****	173	190	172	212	196	8.65	9.325
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	17‡	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	...	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	...	9.95	10.50†
SparrowsPt. *B3***	175	.....	...	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C7*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

Youngstown flat-rolled steel

will help build the cars of his day

Sleek, low-sweeping bodies on vast numbers of cars produced in *his* day will call for far greater quantities of flat-rolled steel than was needed in Dad's time. Youngstown, today, is anticipating tomorrow's need for more and better flat-rolled steel. Continuing advancements in research and steel-making facilities make certain that when he, and millions of others, are ready for their 1979 models . . . *Youngstown flat-rolled steel will help produce them.*

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel
Youngstown, Ohio

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders	8.10
Cutting and Scarfing Powders	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine ½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
⅜ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
⅜ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
(Add 25 pct for broken case or keg quantities)	
Finished	
⅞ in. and smaller	65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws	*Discount (Packages)*
	Full Finished H. C. Heat Treat
New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54
¾", ⅞", and 1" diam. x 6" and shorter	38
⅝" diam. and smaller x longer than 6"	..
¾", ⅞", and 1" diam. x longer than 6"	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish		
Cartons	60	60
Bulk		
Quantity		
To ⅛" diam. incl. — 25,000-and over	60	..
5/16 to ½" diam. incl. — 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅜" diam. & smaller — 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 500 lb lots	42.25
Electrodeposited	33.25
Brass, 80-20, ball anodes, 2000 lb or more	46.50
Zinc, ball anodes, 2000 lb lots	17.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.45
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	45.00
Nickel chloride, freight allowed, 100 lb	82.25
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.15)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 87, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (10 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4130 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4130 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.02	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.85	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	.10	9.41	10.50	11.49	9.84	10.12	10.11	10.21	13.45*	16.79	15.79	20.29	19.56
Buffalo	.15	8.40	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.33	19.01	19.30
Chicago	.15	8.40	9.60	10.65	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	10.70	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	10.80	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.66	9.85	11.02	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[6]	11.20-11.80	12.20	9.15	9.10	9.60	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.54	9.73	10.79	8.80	9.18	9.37	9.23	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	11.29	9.74	9.87	9.84	10.09	13.35*	16.16	15.66	20.10	19.35
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.79				
Philadelphia	.10	8.30	9.35	10.44	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50-8.60	9.70-9.95	11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20	11.40	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle		9.95	11.55	12.45	10.00	9.70	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.10	11.70	12.60	10.65	9.85	9.95	10.75	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.78	9.98	11.03	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.70[7]	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4½" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999; [8] 15 ga. & heavier.

(Effective Dec. 1, 1958)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31–0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01–15.50), $101.00; Keokuk (14.01–14.50), $103.50; (15.51–16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50–52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Detroit, *S1*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6*; Gary, *U1* (25¢ per lb. higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

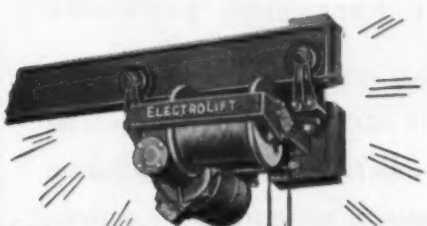
Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*; Detroit, *R5*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Baltimore, *E1*; Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective Dec. 1, 1958)



ELECTROLIFT

...for long-term unfailing performance

The ElectroLift worm-drive hoists—in capacities from ¼ to 10 tons . . . compact design requiring minimum headroom . . . superior braking power . . . simplicity of operation—are noted for their productive and dependable long life. Consult your local ElectroLift representative, or write for a complete catalog.

WORM DRIVE ELECTROLIFT HOISTS

5844

204 Sargeant Avenue Clifton, N. J.

SPRINGS SPRINGS SPRINGS

Precision engineered — low cost!

Our widely diversified experience and ample manufacturing facilities; the ability to produce specification springs of consistent uniformity — are reasons why so many of the nation's leading manufacturers specify HAN-DEE.

Send For Our Free Catalog

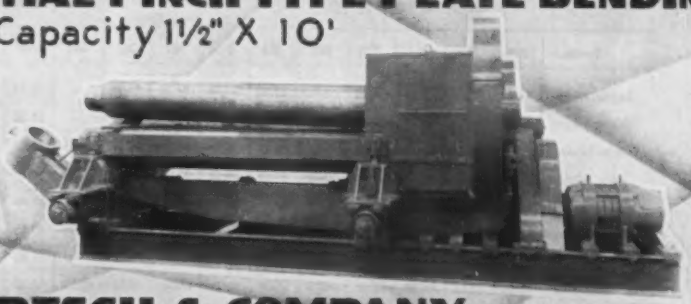
HAN-DEE

THE HAN-DEE SPRING & MANUFACTURING COMPANY

2070 PARK STREET, HARTFORD, CONNECTICUT

INITIAL PINCH TYPE PLATE BENDING ROLL

Capacity 1½" X 10'



Our Line

Light and heavy machinery for all classes of sheet metal, plate and structural work

BERTSCH & COMPANY, CAMBRIDGE CITY • INDIANA

ELECTRIC FURNACE

STEEL CASTINGS

CARBON • ALLOY • STAINLESS

"C" Steel Castings possess many qualities other than the strength of steel. They provide for more freedom and efficiency of design, better weight-strength ratio and greater fatigue resistance, i.e., longer life and less replacement. "C" Steel Castings

SAND OR SHELL MOLDED

are foundry engineered from pattern to finished casting. They require minimum machining and assembly costs. Perhaps you can utilize the advantages of "C" Steel Castings in your products to reduce costs and gain additional quality and buyers' appeal. Our engineering staff is at your service. Write, phone or call.

CRUCIBLE STEEL CASTING CO.

LANSDOWNE 1, PENNA.

PUZZLED...

about personnel problems

Dissatisfied with present recruiting methods? The IRON AGE Employment Exchange is the meeting place for employers and men qualified in all phases of metalworking. For advertising rates, write to Chestnut and 56th Sts., Philadelphia 39.

THE FINEST STANDARD

BRIGHT and HEAT TREATED

CAP SCREWS

AS WELL AS

PRECISION

MILLED-FROM-THE-BAR

CAP SCREWS • SET SCREWS • COUPLING BOLTS and STUDS

ARE PRODUCED BY

Wm. H. Ottemiller Co. YORK PENNA

Precision Milled Specials? Of Course! We'll be glad to quote on yours — promptly

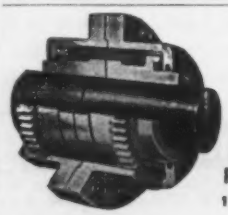
---

HOT DIP GALVANIZING

JOSEPH P. CATTIE & BROTHERS, INC.

2520 East Hagert St.

Phone: Re 9-8911 Phila. 25, Pa.



POOLE

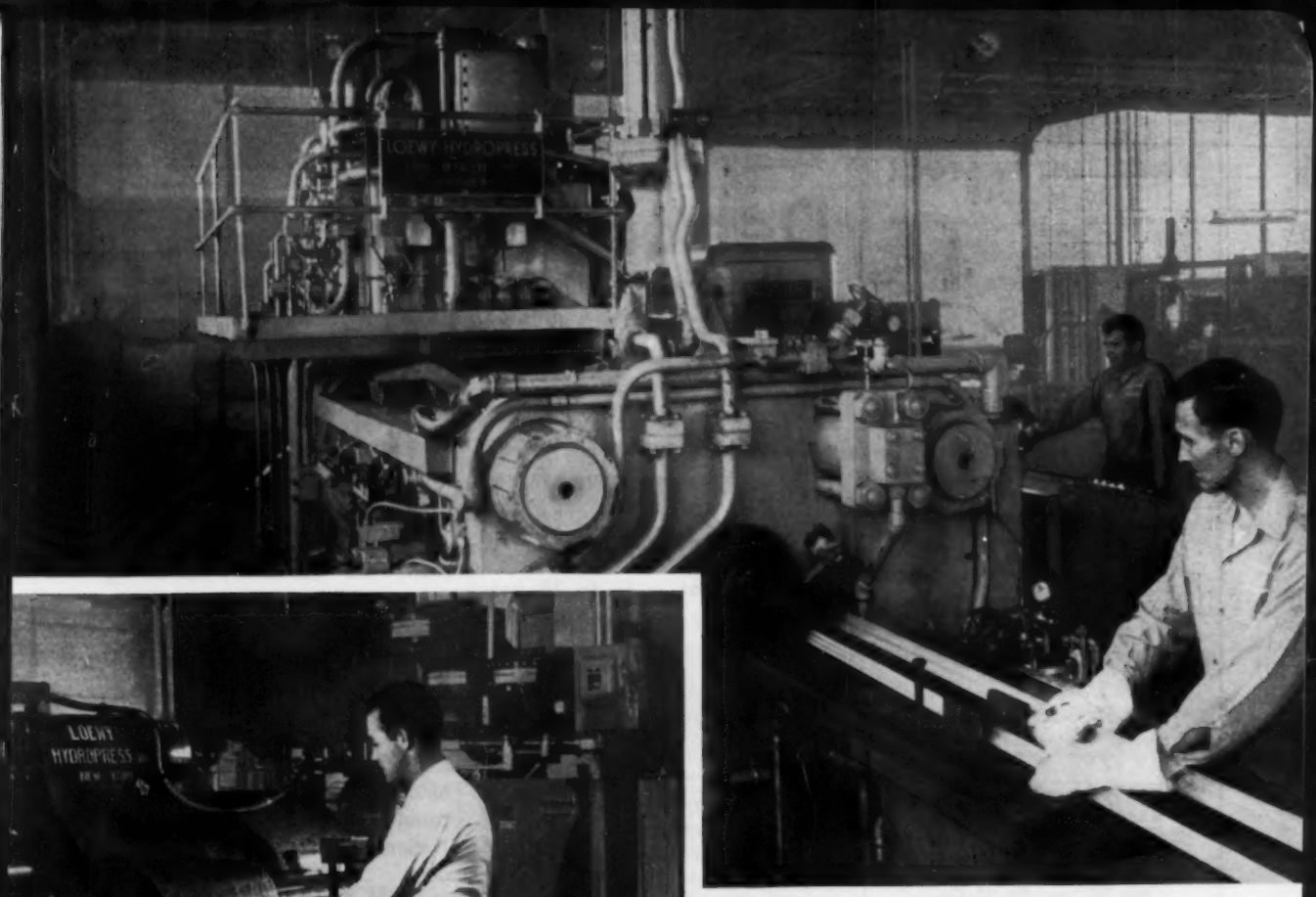
FLEXIBLE COUPLINGS

ALL SIZES AND TYPES

CATALOG ON REQUEST

POOLE FOUNDRY & MACHINE CO.

1700 UNION AVE., BALTIMORE 11, MD.



(above) At Alan-Scott Aluminum Corp., Division of Seasonmaster, Inc., Westbury, N.Y.

LOEWY 1250-TON-CAPACITY OIL-HYDRAULIC SELF-CONTAINED EXTRUSION PRESSES IN OPERATION

(left) At Arvin Industries, Inc., Columbus, Ind.

Loewy offers not only the finest extrusion presses, but also expert counsel on production planning

No longer is it enough for a pressbuilder to produce machinery which performs at high speed and with great precision and economy. His close contact with the individual business problems of many enterprises places him in the seat of a counselor, where his familiarity with the needs of industry and its problems of obsolescence, changes in trends and markets, new opportunities or local conditions, can be extremely valuable. Certainly in the ever-growing and complex field of extrusion his judgment can be of great value.

There is hardly any new development in our fast-moving technology which does not depend on the almost unlimited possibilities of extrusion. This is particularly true in the nuclear industry and the field of rockets and missiles. The application of extrusion widens every day. According to a recent report, school architects alone specified 75 aluminum extrusion applications. And a recent exhibit singled out 50 different fields in which extruded metals are being utilized.

Baldwin-Lima-Hamilton's Loewy-Hydropress Division, which pioneered extrusion in America, keeps a sharp eye on all developments in the markets for extrusion. And when you buy your extrusion equipment from us, we tackle not only problems relating to equipment design, but also those relating to production economy. This extra assistance goes with your order as an integral part of our service.

You may also be interested to learn that special attention will be given to your inquiries on the design, construction and implementation of complete plants ready to operate, including the selection of the site and production planning, or what are known as turn-key projects. For complete information on our facilities to serve you, write to Dept. A-12.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

BALDWIN BLH LIMA-HAMILTON

ELECTRICAL POWER
EQUIPMENT IN STOCK
DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	330
1	3000	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	525	600
1	1375	G.E.	MCF	415	1300
1	1300	G.E.	MCF-12	500	300/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	B.S.	Enc. F.V.	600	800/1000
2	800	G.E.	MCF	250	400/750
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/360
2	645	S.S.	Enc. F.V.	300	1000
4	600	Whse.		250	275/550
1	500	G.E. B.B.	TLF-2656H	250	2000/3600
1	500	G.E.	MPC-10	250	188/400
3	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
1	300	Cr.Wh.	H-102 B.B.	230	1200
2	300	G.E.	MPC	230	400
2	275	G.E. B.B.	TLC-108	250	2000/4000
1	225	G.E. B.B.		250	1150/3600
1	200	Rel. B.B.	T-664-D.P.	240	850
1	200	Whse.	CB-207-4	250	850/1200
1	150	Cr.Wh.	CMC-65H	230	1150
1	150	G.E. B.B.	TLC-74	250	1150/3500
1	150	G.E. B.B.	CD	600	250/750
1	120	G.E. B.B.	TLC-50	250	1950/5000
1	125/150	New Whse.	CB-210.3	230	300/1200
1	120	Rel. B.B.	1050T	230	575/900
2	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-115	250	1750
1	80	Whse.	SK-123.9	240	2000/4500
1	75	Rel. B.B.	T-663 D.P.	240	500/1000
1	75	G.E. B.B.	CD-1235-D.P.	600	450
1	60/75	Rel. B.B.	T-664-D.P.	240	300/1200
1	50	G.E.	CD-1136	230	690/1050
1	40	Rel. B.B.	TY 663	240	300/1200
1	25/33	Rel. B.B.	TY563	240	300/1200
2	60	Rel. B.B.	T-406-D.P.	240	1750/2400
1	50	Rel. B.B.	T-405-D.P.	240	1750
1	40	Rel. B.B.	T-405-D.P.	240	1750
6	40	Rel. B.B.	885F, TEFC	230	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/900

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2—150 KW, G.E., Ignitron, 345 V. D.C.—230 V. A.C., air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2500	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	600	600	11000/6600
1	1500	S.S. 3 unit	720	600	11000/6600
1	1500	Cr.Wh. 4 unit	720	100	2300
2	1000	G.E.	720	600	6600/13200
2	750	G.E.	720	250/300	6600/13200
1	500	G.E.	900	125/250	440
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	240	Whse.	900	125	220/440
1	200	G.E.	1200	250	440/550
1	200	Whse.	1200	550	2200
1	200	El.Mhy.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	690	125/250	2300
1	125	G.E.	1800	250	220/440
1	100	G.E.	1170	250	220/440
1	100	Cr.Wh.	1800	240	440
2	100	Cr.Wh.	1160	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltage
2	3333	Whse.	OISC	1	13800 x 2300
1	1500	G.E. auto	HT	3	4000/4200/4400
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x85/55-255/165
3	500	Kuhl	OISC	1	13200 x 6600
3	333	G.E.	HS-W4R	1	2400/4160 240 x 480
3	333	G.E.	OISC	3	2400/4160Y x 600
3	150	G.E.	OISC	1	3300x2300/4000Y
3	100	Whse.	SK	1	4600x460/230/115
3	100	L.M.	LA	1	4160/7200x240/480

CRANE & MILL MOTORS
230 V., D.C.

Qu.	H.P.	Make	RPM	Type
14	12/15	Whse.	700/800	MCA-30, Series
1	20	Whse.	975	K-5, Series
2	22	G.E.	850	MDS-408
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	400	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Sh. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
2	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AEB.B.
1	50	Cr.Wh.	950	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
6	100/140	Whse.	500/415	MC-90 R.B.

RE-NU-BILT By

BELYEA COMPANY, INC.

47 Howell St. Jersey City 6, N. J.

Tel. OLdfield 3-3334

Detroit Reports Steady Pickup

Auto labor settlement failed to bring expected influx of new orders.

But business is improving, and some look for a 10 to 15 pct advance over third quarter.

■ Settlement of labor contracts by the auto industry failed to bring the hoped-for rush of orders for used machinery. But there has been a gradual, steady pickup in business.

Few customers seem pressed to buy equipment immediately. Consequently, price shopping is very much in evidence, although prices are still generally below levels of a year ago.

No Price Resistance—In those instances where a customer has an immediate need for a particular piece of equipment there is little price resistance shown.

In many cases, these customers did their shopping during the past summer, when their business was slow, in anticipation of additional work this fall. They knew what they wanted, where it was available, and what it would cost.

Emphasis on Production — Production items are in greatest demand—standard milling machines, drill presses, grinders, etc. While demand for tool room equipment lags behind the increase for production equipment, and the competition is keener, good equipment can generally find a ready market.

Many potential customers either can't get or don't want to commit themselves to credit purchases. Government sales of surplus tools and the continuing high number of auctions are credited by most dealers with holding down any sharp increase in used machinery sales.

Upturn Predicted — However, many are confidently predicting sales in the fourth quarter will top the third quarter by 10 to 15 pct. And they are optimistic that next year will be decidedly better than 1958.

One reason for the optimism is the new inventory listing of Guaranteed Metalworking Machines distributed by the Machinery Dealers National Association to its members.

Dealers Enthusiastic — Dealers are just receiving their copies of the machinery inventory, but already they're enthusiastic over its potential. For one thing local dealers feel sure it will boost their interstate sales. Michigan, they point out, has a surplus of excellent used machinery.

"The shipping dept. fixed me up temporarily."

CONSIDER GOOD USED EQUIPMENT FIRST

ANGLE BENDING ROLL
4" x 4" x ⅝" Thomas #3 Horizontal

BENDING ROLLS
12' x ⅝" Hilles & Jones Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW

BRAKE—LEAF TYPE
12' x ¼" Dreis & Krump #236

BRAKE—PRESS TYPE
12' x ¼" Airtherm Model No. 3814

CHARGING MACHINE
Salem Brosius 4-wheel Furnace Charging Machine. Charge Boxes 38" x 32" x 76" Inside Measurement

CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton	P&H	60' Span 230 Volt D.C.
8 ton	P&H	65' Span 220/3/60
10 ton	P&H	50' Span 230 Volt D.C.
10 ton	P&H	39' Span 230 Volt D.C.
10 ton	Milwaukee	57' Span 220 Volt D.C.
10 ton	Shaw	48' Span 230 Volt D.C.
10 ton	Whiting	75' Span 230/3/60 A.C.
10 ton	Shaw	120' Span 230 Volt D.C.
15 ton	P&H	50' Span 230 Volt D.C.
15 ton	Northern	54' Span 230 Volt D.C.
15 ton	Shepard Niles	56' Span 230 Volt D.C.
15 ton	N-B-P	100' Span 220/3/60 A.C.
120 ton	Shepard Niles	77' Span 220/3/60

DRAW BENCHES
2000 lb. Draw Bench, 30 ft. Pull
7000 lb. Draw Bench, 50 ft. Pull—New 1956
10,000 lb. Draw Bench, 50 ft. Draw—LATE

FORGING MACHINES
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.

LEVELERS—ROLLER
64" McKay 17 Rolls 4⅛" dia.
60" Aetna Standard, 17 Rolls 4⅝" dia.
72" McKay 15 Rolls 4⅛" dia.
84" Bliss 17 Rolls 5⅛" dia.

PRESSES—HYDRAULIC
300 ton Southwark, Bed 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Birdsboro, Platen 48 x 48", 15" Stroke
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4500 ton B-L-H Bed 68 x 66", Stroke 40"

32' x ¾" BALDWIN
PYRAMID TYPE BENDING ROLL
Air Actuated Drop End
2 Motors—60 & 40 H.P. A.C.
NEW 1942

PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ⅝" x ⅝"
Cleveland Style EF, Capy. 1¼" x 1"

ROLLING MILLS
6" x 8" Torrington Flat Wire Mill Line
2½" x 9" x 9" 4-High Strip Mill
3¼" x 7" 8Ix Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLLS—FORMING
6 Stand Dahlstrom #450-6 for stock to 4⅛" wide up to 11 Ga.
18 Stand Custom Built, 2½ Shaft, will take 36" wide

ROLLS—PLATE STRAIGHTENERS
108 Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones

SHEAR LINES
36" x .020 Ga. Hallden Shear Line
96" Cleveland, Capy. 14 Ga. Pay Off & Tables

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
8' x ¼" Niagara No. 8E
10' x ⅜" Niagara

SLITTERS
30" Yoder M-2-⅜ Slitting Line
36" Yoder, 4½" Dia. Arbor

STRAIGHTENERS
Torrington #1734 13-Roll, Capy. 1¾" Rd. 1-9/16" #4—12⅛ Littell Indexing, Feeding & Straightening Machine, Capacity .062" x 12" in SAE 1010 Steel

SWAGING MACHINES
#4A Standard 2-Die, Capy. 2¼" Tube
#6"A Fenn Capacity 3⅝ Tube 1⅛" Solid
10" Die Length Hydraulic Feed, LATE

TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
60,000 lb. Olsen Univ. Hydraulic
100,000 lb. Olsen Universal Beam Type

TUBE REDUCERS
1½" Tube Reducer for steel
2⅛" Tube Reducer for aluminum

WIRE DRAWING MACHINE
Type B Morgan 4-Block Capy. #5 Rod down

• Manufacturing — **A. T. HENRY & COMPANY, INC.** — Equipment •

50 CHURCH ST., NEW YORK CITY 8
Telephone COrtlandt 7-3437

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

COX MACHINES
Pipe Cutting and Threading
Tube Cutoff
New Machines Only
The Cox and Sons Company
Bridgeton, N. J.
Catalogue upon Request

500 TONS OF UNUSED 100#
ARAA RAIL IN STOCK
ATTRACTIVE PRICE QUOTED
M. K. FRANK
480 Lexington Ave., New York 17, N. Y.
401 Park Bldg., Fifth Ave., Pittsburgh 22, Penna.

LIFTING MAGNETS
A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.
Magnet specialists since 1910
Goodman Electric Machinery Co.
1060 Broad St. Newark 2, N. J.

ROLLING MILLS & EQUIPMENT

MESTA TANDEM MILL—5 STAND—4 HI

Complete with uncoiler—recoiler—M.G. set—800 H.P. drive ea. stand
Work Rolls 18⅞" x 42" and Back Up Rolls 49½ x 42".

TWO STAND TANDEM MILL—2 HI

500 H.P. drive motor on #1 stand—#2 stand full reversing with 400 H.P. motor.
Complete with 700 K.W.—M.G. set
Now reducing .400 thick brass slabs to ⅛"
Roll Size 22" Dia. x 36".

SKIN PASS MILL—4 HI

Back up rolls 30" dia. x 32" face—work rolls 15¼" dia. x 31" face
500 H.P. drive motor, winding reel with motor 300 HP, Coiler with 50 HP motor, M.G. sets, drag generators, etc.

• Mesta Uncoiler • Coil Upender & Conveyor • Hot Strip Pickle Line • Batch Pickle Machine (complete) • Cleaning Line (washer) • Hot Dip Tinning Machines • Roll Grinder 36 x 155 • Galvanizing Line • Hallden Shear Line With Leveller, Side Trimmer & Sheet Classifier •

We Have Engineering Facilities to Rebuild - Modernize - Automatize & Redesign All Mill Equipment.

ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT 26, MICH. WO. 1-1894

UNIVERSAL Machinery & Equipment Co.

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

ARC MELTING FURNACES
1—250# LECTROMELT—300 KVA
1—500# LECTROMELT—2300/3/60
1—1000/hr., 5 dia.—500 KVA, 4160/3/60
1—3000# HEROULT—1200 KVA, 2300 V.
1—6000# LECTROMELT—2500 KVA
1—6000# SWINDELL Top Charge—Late
1—6' dia. WHITING Duplexing, 8 ton/hr.
DETROIT FURNACES—10 lb. to 3000 lb. Cap.

INDUCTION MELTING FURNACES
1— 3 KW AJAX, Lab Type
1— 20 KW AJAX Spark Gap, High Freq.
1—333 KW AJAX 1000# Steel

HEAT TREAT FURNACES

BARGAIN
4' x 4' x 10' Gas Fired Furnace
1—3' x 3' x 6' deep TATE JONES, gas fired 1800°F.
1—20"x36" L&N electric hardening

CLEANING EQUIPMENT AND GRINDERS
1—36" Continuous WHEELABRATOR, used 2 mos.
1—27x36 WHEELABRATOR w/loader
1—36x42 WHEELABRATOR w/loader
1—48x42 WHEELABRATOR w/loader
1—AMERICAN #1A Multitable 6-26" tables
1—AMERICAN #1 Plain Table
1—PANGBORN Type ES-421 Shell Blast. Mach.
1—PANGBORN TABLAST, 8' Table
5—SLY Tumbling Barrels, 40" dia. x 62" L
10—5 to 15 Hp Hevi-Duty, Double End Grinders
1—MARSCHKE 10 HP Swing Frame Grinder
LARGE STOCK OF DUST COLLECTORS

. . . SPECIAL . . .

HOUGH Model HA Payloader, 1000 lb. capacity hyd. lift, hydraulic dump, pneumatic tires
200,000# BALDWIN Hydraulic Universal Tensile Testing Machine

2—WHITING #7 Cupolas, 7 ton capacity, 72" shell dia., 55' high—Complete. NEW—FRACTION OF COST!

1630 NORTH NINTH ST. READING, PA. PHONE FRANKLIN 3-5103

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

STEEL MILL SPECIALS

(1) 2200-HP. Westinghouse Motor, 600 V.D.C., 300/600 R.P.M.

(1) 1250-H.P., Allis-Chalmers Motor, 600 V.D.C., 300/600 R.P.M.

(1) S.S. 4-unit M.G. Set consists of 2500-H.P., 8 P.F. Syn. motor, 11000/4160-V., 3 ph., 60 cy. (1) 1060-K.W. Gen. 600-V.D.C. and (2) 760-K.W. 600-V.D.C. Generators, complete with exciter sets.

(2) S.S. 645-H.P. Mill Motors, each 300-V.D.C. 1000 R.P.M. (used with above 1060-K.W. Gen.)

(2) S.S. Reel Motors (mill type) each 940-H.P. 800/1000 R.P.M., 600-V.D.C. (used with above (2) 760-K.W. Gen.). We will sell the above complete

PACKAGE or segregate it to suit your REQUIREMENTS with necessary CONTROLS.

Special, before removal (1) 1875-K.W. Whse., M.G. Set, Gen. 250-V.D.C., 514 R.P.M. with 2700-H.P. Syn. Motor, 13800/6900/4000-V., 3 ph., 60 cy. with Control.

T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Cable Address "Macsteel" Philadelphia, Pa.
Phone Davenport 4-8300

IMMEDIATE DELIVERY ALL TYPES

RAILWAY CARS

AND LOCOMOTIVES

FOR SALE

RECONDITIONED OR "AS IS"

Freight car repair parts, relay rails, cross-ties, accessories

MORRISON RAILWAY SUPPLY CORP.
Rand Bldg.—BUFFALO 3, N. Y.
Phone: MOhawk 5820

COMPRESSORS

America's dominant medium for Compressors—AMERICAN

100 CFM 125 psi 6 x 7 Ing. or Worth.
138 CFM 100 psi 7 x 7 Ing. ES-1.
268 CFM 500 psi 10-4½ x 10 Ing.
465 CFM 100 psi 12 x 11 Ing.
502 CFM 125 psi 12 x 13 Worth HB.
585 CFM 100 psi 15-9¼ x 12 Ing. 3-80-4180.
590 CFM 100 psi 13½-8 x 8 Penn. DE2- 3-80-220.
628 CFM 100 psi 14 x 13 Worth. HB.
676 CFM 100 psi 15-8½ x 12 Ing. XRB-Worth.
800 CFM 125 psi 13-8 x 7 Joy WN102 150 HP 3-80-440.
870 CFM 125 psi 17-10½ x 17 Ing. XRE 3-80-220.
973 CFM 125 psi 16-10 x 7 Ing. XLE 150 HP Syn 3-80-440.
1065 CFM 100 psi 18-11 x 12 Ing. XRE.
1302 CFM 125 psi 20-12 x 14 Chic. OCE 225 HP Syn 3-80-440.
1352 CFM 125 psi 18½-11½ x 8½ Ing. XLE 200 HP Syn 3-60-2300 .8PF.
3682 CFM 110 psi 33-20½ x 24 Ing. PRE2 700 HP 3-80-2200.

AMERICAN AIR COMPRESSOR CORP.
DELL & 48TH STREET
NORTH BERGEN, N. J.
Telephone UNion 5-4848

OFFERING

BRIDGE CRANES

ARNOLD HUGHES COMPANY
2765 Penobscot Bldg. Detroit, Mich.
WOodward 1-1894

RAILWAY EQUIPMENT

FOR SALE
Used As-Is Reconditioned
RAILWAY CARS
All Types

SERVICE-TESTED FREIGHT CAR REPAIR PARTS
For All Types of Cars

LOCOMOTIVES
Diesel, Steam, Gasoline Diesel-Electric

SPECIAL
STANDARD GAUGE CARS
COVERED HOPPER CARS
10-70 ton Capacity
ORE HOPPER CARS
660 Cubic Feet
40- and 50-Ton Capacity

RAILWAY TANK CARS and STORAGE TANKS
6,000- 8,000- and 10,000-Gallon Cleaned and Tested

CRANES
Overhead and Locomotive

IRON & STEEL PRODUCTS, INC.
General Office
13496 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, 51-B East 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766

"ANYTHING containing IRON or STEEL"

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

MISCELLANEOUS
No. 56 Sundstrand Double End Centering
No. 53A Sundstrand Double End Opposed Type Drilling & Centering Machine
No. 125 Markin Marking Machine, m.d.
Sciaky Type PMC0-2S-31 Storage of Energy Spot Welder, 50-KW, 34" throat
Pratt & Whitney Standard Measuring Machine, 36" capacity
Type 114CB Moline Tool Boring Machine, 2 spindle type, m.d.
15" Gleason Quenching Press
LeRoi Electric Power Plant
38" Face Plate, taper nose key mounted, new
Hanchett Grinding Head, vertical type for mounting on planer rail
16"x20" O.S. Walker Magnetic Chuck
Clamping Assembly to fit a 6.2 Denver Acme Turret Lathe
1 ton Shaw Electric Cable Hoist
Brown & Sharpe Universal Attachment, for use on 2A Brown & Sharpe Miller
63" Walker Rotary Magnetic Chuck, 230 volt D.C., new
Portable Greasing Machine, motor operated
Model 75M, 75 ton Lempco Hand Operated Hydraulic Press, new
Megatherm H.S. Induction Heating Unit
No. 72 Heald Workhead Assembly
6" Victor Swivel Vise
24"x24"x5" Thick Diamond Cast Iron Lapping Plate
No. 0 Ingersoll-Rand, "Multivan" Air Operated Hand Grinder, new
No. 00 Ingersoll-Rand, "Multivan" Air Operated Head Grinder, new
6x18" Brown & Sharpe Permanent Magnetic Chuck
No. 1A Grant Riveter
Model 82A Grant Spinning Type Riveter
No. 3A Pratt & Whitney Model 1458 Die Sinking Machine
King Boring Mill Table, 32" Diameter, 4 jaw independent chuck, new
Jones & Lamson Automatic Die Head Hardness No. 7H
9x9 Curtis Model A Air Compressor, flat belt drive
Type 40, Model 75 BH, 2 stage Ingersoll Rand Air Compressor, m.d.
No. 26 Norton Hyprolap, m.d., late

SLOTTERS
18" Niles-Bement, s.p.d.
20-24" Pattern Dill, m.d.
24" Betts, m.d.
48" Niles, m.d.

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio

MElrose 1241 "TWX" CI 174 CABLE ADDRESS—EMCO

EST. 1904

DAVIDSON

PIPE COMPANY INC.

ONE OF THE LARGEST STOCKS IN THE EAST

Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300

50th St. & 2nd Ave., B'klyn 32, N. Y.

STRAIGHTENERS

SHEET

54" x ⅜" McKay Gear Box 7 Rolls
60" x ¼" Aetna Gear Box 17 Rolls
60" x ¼" Roll & Machine Gear Box 17 Rolls

BAR

Kane & Roach, Cap. 3½" Solids 2 Rolls
#0 Sutton, Cap. 5/16" to 1" 5 Rolls
#1 Special Sutton, Cap. ⅜" to 3⅛" 5 Rolls
V-3 Brightman, Cap. 1" to 6" Press Type

IN STOCK — IMMEDIATE DELIVERY

LANG MACHINERY COMPANY, INC.

28th ST. & A.V.R.R. PITTSBURGH 22, PA.
GRant 1-3594

WORLD'S LARGEST STOCK

STAMPING PRESSES

SQUARING SHEARS • PRESS BRAKES

REBUILT and GUARANTEED

WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM

JOSEPH HYMAN & SONS

Tioga, Livingston & Almond Sts.
Philadelphia 34, Pa. Phone GArfield 3-8700

CRANES

BOUGHT & SOLD

ENGINEERED TO YOUR REQUIREMENTS

Ornitz Equipment Corp.

Industrial Engineering Service
595 Bergen St. Brooklyn 38, N. Y.
NEvins 8-3566

FOR SALE

COMPLETE STRIP ROLLING MILL

Late Type, Still Set-Up In Plant

BLISS 4 Stand Tandem, continuous strip mill, rolls 16" diameter x 24" face. Individual 250 h.p. D.C. variable speed motors & controls. Equipped with motor driven recoiler.

NATIONAL MACHINERY EXCHANGE

126 Mott St. New York 13, N. Y.
CAnal 6-2470

FOR SALE

FREIGHT CAR REPAIR PARTS
RELAYING RAILS & ACCESSORIES
STEEL STORAGE TANKS
FRT. CARS & LOCOMOTIVES
CONTRACTOR EQUIP. & MACHINERY

THE PURDY CO.

8754 S. DOBSON AVE.

CHICAGO 19, ILL. — BA. 1-2100
ALSO ST. LOUIS, MO., SAN FRAN. AND LONG BEACH, CALIF.

MACHINES FOR YOUR YARD

Unit ½ yd. #514 backhoe
Bay City Model 25 dragline
Austin 8 ton Roller KT-142
Int. TD-9 tractor w/B-E dozer
Jeep w/Jeep-a-Trench & dozer blade
Telsmith 5x14 Vibro King d.d. screen

TRACTOR & EQUIPMENT CO.

10006 Southwest Highway, Oak Lawn, Ill.

WIRE ROD-ROLLING MILL FOR SALE

COMPLETE ROD MILL. Roughing Mill—2-20" and 1-18" Stands, 1200 HP Motor; 3-12" Stands, 900 HP Motor. Finishing Mill—4-10" Stands, 1300 HP Motor; 4-10" Stands, 1500 HP Motor. Extra Rolls, Coilers, Bailer, Shears, Conveyor, Pushers, Unloaders, Spare Parts, Drawings. Adaptable to Bars and Structurals.

THE PURDY COMPANY

8754 So. Dobson Ave., Chicago 19, Illinois
Phone BAyport 1-2100

FOR SALE OR RENT

50 Ton American Diesel Locomotive Crane, New 1944. Caterpillar D-17000 Engine. 15 KW Magnet Generator.
30 Ton Browning Diesel Loco. Crane.
65 Ton Whitcomb Diesel Elec. Loco. New 1943. Reconditioned. Cummins Engines. Like New.
44 Ton Gen. Elec. and Whitcomb Diesel Elec. Locos. 4 Traction Motors. Heavy Duty.
50 TonAmer.Guy Derrick. 115' Mast,100' Boom.
60 Ton Link Belt K-595 Lifting Crane. 120' Boom. Cat. D-17000 Diesel.

WHISLER EQUIPMENT CO.

1910 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK

WRITE FOR LATEST STOCK LIST

MILES MACHINERY COMPANY

2041 EAST GENESEE • SAGINAW, MICH. PL. 7-3105

Locomotives & Locomotive Cranes

1—25 Ton Diesel Electric Locomotive
1—45 Ton G. E. Diesel Electric Locomotive
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane
1—25 Ton Bay City 190T61 Truck Crane

B. M. WEISS COMPANY

Girard Trust Bldg. Philadelphia 2, Pa.

FRACTIONATING COLUMN

78' High, 36 Plates, Heat Exchangers, Decanter, etc. Suitable distilling 100,000 gals./month light oil from coke ovens, refinery, organic solvents.
20 NEW G.E. ARC WELDERS, 200, 300 AMP.

PROCESS EQUIPMENT SALES CORP.

4205 FULLERTON DETROIT 38, MICH.

WHIRLEY CRANE FOR SALE

American Model 685, electric, with traveling gantry, 75' boom, 150 HP, excellent, immediate shipment.

George M. Meriwether, Inc.

1712 7th Ave. No. FA 4-2456 Birmingham 4, Ala.

FOR SALE

500,000# Titanium Turnings

ACME IRON & METAL CO.

15725 Saranac Rd. Cleveland 10, Ohio

CONTRACT MANUFACTURING

SPECIAL MACHINERY

DIAMITE *Abrasive Resistant* Castings
NI-RESIST *Heat & Corrosion Resistant* Castings
F M G BRONZE *High Strength Acid Resistant* Castings

Fully Equipped—Pattern Foundry & Machine Shop Facilities—Castings to 15 tons

Weatherly Foundry & Mfg. Co., Weatherly, Pa.

Special Washers

We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to ⅜" thick.

Thomas Smith Company

294 Grove St., Worcester, Mass.

K

SINCE 1895

DROP FORGINGS

Small drop forgings up to one pound in size. Inquiries invited for very prompt action.

KEYSTONE FORGING COMPANY

Northumberland Pennsylvania GReenwood 3-3525

WELDED or RIVETED

STEEL PLATE FABRICATION

- ★ Gas Seal Hoods for Blast Furnaces
- ★ Furnace Roof Rings
- ★ Cinder Cooling Cars
- ★ Billet Cars
- ★ Ingot Cars
- ★ Ladle Cars
- ★ Hopper Cars
- ★ Gondola Cars
- ★ Heavy Truck Bodies
- ★ Boiler Casings
- ★ Boiler Breechings
- ★ Flues and Ducts
- ★ Condenser Shells
- ★ Condenser Piping
- ★ Heavy Turbine Housings
- ★ Hoppers and Bunkers
- ★ Tanks and Vats
- ★ Pressure Vessels
- ★ Wind Tunnels
- ★ Crane Bridge Girders
- ★ Trolley Frames and Trucks
- ★ Rigid Frames
- ★ Roll-Over Fixtures
- ★ Engine Frames and Bases
- ★ Crawler Frames
- ★ Press Platens and Beds
- ★ Press Columns
- ★ Heavy Machinery Parts and Assemblies
- ★ Design Conversion of Castings to Weldments

MACHINING

- ★ Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York and Chicago

MAHON

AVAILABLE!
COMPLETE PRODUCTION FACILITIES

Complete facilities in greater Chicago area now available for production work on large steel castings and forgings, big structural units, heavy machining and assembly work. Plant manned by skilled workmen accustomed to working to close tolerances. Fully-equipped tool room and tool design facilities.

STEEL FOUNDRY with open hearth and electric furnaces with capacity of 1,500 tons per month. Can handle 25-ton castings.

BRASS FOUNDRY—Capacity, 100 tons per month. Can handle single castings to 1,300 lbs.

OPEN HAMMER FORGE SHOP with manipulator capacity of 6,000 lbs.

MODERN HEAT TREATING AND ANNEALING DEPARTMENT with both oil and water quenching facilities.

ERECTING—42,000 sq. ft. of floor space.

HEAVY MACHINING—Modern machine tools include 72" x 264" engine lathe and 11' x 50' planer. Also, vertical and horizontal boring mills, gear cutters to 18' dia., etc.

FABRICATING — Shearing, rolling, and brake-forming equipment; complete welding shop including 50-ton positioner.

WE WELCOME YOUR INQUIRY!

ADDRESS BOX G-796, Care The Iron Age, Chestnut & 56th Sts., Philadelphia 39.

THE FORMULA:

Multi-operation presses
plus
Yankee skilled workmen
over
Eighty years manufacturing know-how equals
Low cost metal stampings
And precision assemblies
To meet your needs

The GREIST MANUFACTURING CO.
646 Blake St., New Haven 15, Conn.

Let us quote on
STAMPINGS and ASSEMBLIES
from drawing or sample

Drilling . . . Blanking . . . Riveting . . . Forming . . . Tapping . . . Welding . . . Toolmaking of course

COMPLETE DESIGN AND DEVELOPMENT FACILITIES

HUEBEL MFG. CO., INC.
763 Lexington Ave. Kenilworth, N. J.

OLSON
SCREW MACHINE PRODUCTS

Made to your specifications and tolerances. From smallest up to 2⅝" diameter in steel, brass and aluminum.

OLSON MANUFACTURING CO.
101 Prescott Street Worcester, Mass.

DROP FORGINGS

To Your Specifications
Prompt Quotations

BALDT ANCHOR CHAIN & FORGE DIVISION
P. O. Box 350—Chester, Pennsylvania

DROP FORGINGS

Special Forgings—High Quality, Fast Delivery
For prompt attention phone or send prints to John Bello.

CARCO INDUSTRIES, INC.
7341 Tulip Street, Phila. 35, Pa.
DEvonshire 3-1200

MEEHANITE® METAL CASTINGS

ROUGH OR MACHINED
ONE TO 60,000 POUNDS
FOR
STRENGTH — ABRASION
CORROSION OR HEAT

ROSEDALE FOUNDRY & MACHINE CO.
1735 PREBLE AVE., PITTSBURGH 33, PA.

STA-FAST STEEL WEDGES

sharp edges give holding power like a screw.
Self-Aligning Steel Belt Fasteners.
Standard Steel Rivets used with Self-Aligning Fasteners.
STAMPINGS PUNCHINGS WASHERS
to your specifications
Catalog sent upon request
SALING MANUFACTURING COMPANY
Standard-Belt-Fastener Division
UNIONVILLE, CONNECTICUT

PIT-MOLDED CASTINGS

. . . a specialty in our MEEHANITE foundry. We can handle any size casting from 5 to 26,000 pounds, rough or machined to your specifications. (MEEHANITE properties lie between cast iron and steel.)

Our shops are also equipped for:
- LARGE PATTERN MAKING
- HEAVY PLATE STEEL FABRICATION
- MACHINE SHOP FACILITIES
- PRODUCTION AND ASSEMBLY OF CUSTOM-BUILT MACHINERY

HARDINGE MANUFACTURING CO.
240 Arch Street York, Pennsylvania
Phone 33821

AUTOMATIC MILLED PARTS DIVISION
Automatic continuous holding unit allows small parts to be milled at speeds of 3000 parts per hour with cost reductions of 50 to 75%.
SIEBURG INDUSTRIES, INC.
DANBURY INDUSTRIAL PARK DANBURY, CONN.

DROP FORGINGS
Special Forgings of Every Description.
We solicit your prints or model for quotation.
Wilcox Forging Corporation
Mechanicsburg Penna.

Gray Iron and Semi Steel Castings, also alloyed with nickel, chrome, and molybdenum. Wood and Aluminum pattern work.
KING FOUNDRIES, INC.
Phone 823 North Wales, Montg. Co., Pa.
22 Miles from Philadelphia, Pennsylvania

DROP FORGE DIES
Forging Engineers—Die Sinkers—Manufacturers of drop forge dies and hot work tools for presses and upsetters.
COMMERCIAL DIE COMPANY
7851 Intervale Ave., Detroit 4, Mich.
Phone: WEBSTER 3-7104 Cable Code "Comdie"

Nepsco
NEW ENGLAND PRESSED STEEL COMPANY
Contract Manufacturer since 1914
METAL STAMPINGS
SPECIALTIES — APPLIANCES
For Industrial and Domestic Users
P. O. BOX 29
NATICK MASSACHUSETTS

EQUIPMENT AND MATERIALS WANTED

WEISS STEEL CO. INC.
600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
38 Years of Steel Service

WANTED
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1814

SURPLUS STEEL
NEW *WANTED* USED
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

WANTED
USED "TOGGLEBEUG"
Portable drill—in good condition
ADDRESS BOX G-801
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

Surplus Steel Wanted
Bars–Sheets–Plates–Structurals
PARKER STEEL COMPANY
4239-41 Monroe St., Toledo 13, Ohio

WANTED
SURPLUS STEEL
WALLACK BROTHERS
7400 S. Damen Ave. Chicago 36, Illinois

EMPLOYMENT EXCHANGE

HELP WANTED

STEEL MILL METALLURGISTS

Graduate metallurgists with steel mill experience are needed for our Metallurgical Department.

Doubled ingot capacity from our NEW OXYGEN STEEL MAKING FURNACES present challenging opportunities in production, quality control and customer service fields. Positions are open for experienced men as well as recent college graduates.

Send complete resume now if your interests and qualifications meet these requirements.

Employment Manager
KAISER STEEL CORP.
P. O. Box 217
Fontana, California

GRADUATE METALLURGIST WANTED
Graduate Metallurgist, not over 35, with degree in Metallurgy or Metallurgical Eng. Must have Ferrous background and several years experience, preferably in electric furnace shop producing roll product. Duties primarily in production and development and will include test evaluation.
ADDRESS BOX G-798
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

HIGH GRADE MEN—Salaries $5,000 to $25,000. Since 1915 thousands of Manufacturing Executives, Engineers, Sales Managers, Comptrollers, Accountants, and other men of equal calibre have used successfully our confidential service in presenting their qualifications to employers. We handle all negotiations. Submit record with inquiry. The National Business Bourse, 20 W. Jackson Blvd., Chicago 4.

MANAGER WANTED
Wire Rope Manufacturing Plant

Excellent opportunity for right man with plant managerial experience. Engineering background essential. Knowledge Wire Rope or Steel Wire manufacture valuable. Medium size company. Replies in strict confidence. Send resume with background and qualifications and indicate salary desired.
ADDRESS BOX G-802
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

Write for sample on company letterhead

THE DYKEM COMPANY
2303G North 11th St. • St. Louis 6, Mo.

CUT SCRAPER TIME

END NIGHT CLEANUP & MORNING REBLUING

DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

THE DYKEM CO., 2303G NORTH 11TH ST., ST. LOUIS 6, MO.

"AM I GOING HOME?"

This is an actual photograph of a boy with pulmonary tuberculosis.

Years ago he might *not* have gone home, ever! But thanks to today's modern methods, his case was diagnosed early—and after only a few months of treatment, he was released from the hospital.

Your purchase of Christmas Seals helps to make true stories like this possible—through continually improved TB *diagnosis, research,* and *patient rehabilitation.* **Buy and use Christmas Seals®**

This space contributed to the National Tuberculosis Association and its affiliates by

The IRON AGE

GOSS and DE LEEUW

MULTIPLE SPINDLE

CHUCKING MACHINES

Four, Five, Six, Eight Spindles • Work and Tool Rotating Type

GOSS & DE LEEUW MACHINE CO. KENSINGTON, CONN.

ADVERTISERS IN THIS ISSUE

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

A

ACCO Registered Slings, American Chain & Cable Co., Inc... 54
*Acimet Mfg. Co. 82
Acme Iron & Metal Co. 197
Aetna-Standard Engineering Co., The 67
Ajax Electric Co. 4
Ajax Electrothermic Corp. 4
Ajax Engineering Corp. 4
Alan Wood Steel Co. 170
Alco Products, Inc. 149
Allegheny Ludlum Steel Corp. ... 100
Amchem Products, Inc. 8
American Air Compressor Corp. 196
American Chain & Cable Co., Inc., ACCO Registered Slings.. 54
American Steel Foundries, King Machine Tool Division 143
*American Steel Warehouse Association 32
American Steel & Wire Div., United States Steel Corp. ...34, 35
*Armco Steel Corp. 6
*Armstrong Bros. Tool Co. 169
*Associated Spring Corp. 60

B

*Babcock & Wilcox Co., The, Refractories Division 81
Baldt Anchor, Chain & Forge Div. 198
Baldwin-Lima-Hamilton Corp., Loewy-Hydropress Div. 193
Baltimore & Ohio Railroad 150
*Barnes, Wallace, Steel Div., Associated Spring Corp. 60
Belyea Co., Inc. 194
Bertsch & Company 193
Bethlehem Steel Co. 1
Birdsboro Steel Foundry & Machine Co. 78
*Bliss, E. W., Co., Rolling Mill Division 155
*Burg Tool Manufacturing Co., Inc. .....124 & 125

C

*Cambridge Wire Cloth Co. 167
Carco Industries, Inc. 198
Carpenter Steel Co., The .....28 & 29
*Carpenter Steel Co., The Alloy Tube Division 80
Cattie, Joseph P., & Bros., Inc... 192
Chambersburg Engineering Co... 44
Chase Brass & Copper Co., Inc... 108
Cincinnati Milling Machine Co., The, Cincinnati Milling Products Div. 14
*Cincinnati Shaper Co., The 64
*Cleveland Punch & Shear Works Co., The 38
*Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 24
Cochran Foil Corporation 66
Colorado Fuel & Iron Corp., The, Wickwire Spencer Steel Div. 42 & 43
Columbia-Geneva Steel Div., United States Steel Corp. 34, 35 & 79
Columbia-Southern Chemical Corp. .....120 & 121
Commercial Die Co. 199
Commercial Shearing & Stamping Co. 10
Consumers Steel & Supply Co.... 199
Continental Steel Corp. 161
*Copperweld Steel Co., Aristoloy Steel Div. ..... Inside Front Cover
Copperweld Steel Co., Ohio Seamless Tube Div. 126
Copperweld Steel Co., Superior Steel Div. 153
Cox & Sons Co., The 195
Crucible Steel Casting Co. 192
Crucible Steel Co. of America . 177
*Cutler-Hammer, Inc. ... Back Cover

D

Davidson Pipe Co., Inc. 197
Demag Aktiengesellschaft 201
Denison Engineering Division, American Brake Shoe Co. 158 & 159
De Vlieg Machine Co. .....46 & 47
*Dykem Company, The 200
*Dyson, Joseph, & Sons, Inc. 176

E

Eastern Machinery Co., The 196
*Electric Furnace Co. 163
*ElectroLift, Inc. 191
Electro Metallurgical Co., Div. of Union Carbide Corp. 52
Elwell-Parker Electric Co. 106

F

Fellows Gear Shaper Co., The... 45
*Fenn Manufacturing Co., The .. 16
Formed Steel Tube Institute..... 116
Frank, M. K. 195

G

Galland-Henning Mfg. Co. 166
*Garlock Packing Co., The..... 61
*Gerrard Steel Strapping Dept., U. S. Steel Supply Division, U. S. Steel Corp. 39
Goodman Electric Machinery Co. 195
Goss & DeLeeuw Machine Co.... 200
Grant Gear Works, Inc. 51
Greist Manufacturing Co., The.. 198

H

*Han-Dee Spring & Mfg. Co., The 191
Hardinge Mfg. Co. 199
Hayward Company, The 173
Henry, A. T., & Company, Inc... 195
*Homestead Valve Manufacturing Co. 183
Huebel Mfg. Co., Inc. 198
Hughes, Arnold, Co....195, 196 & 199
Hyde Park Foundry & Machine Co. 146
Hyman, Joseph, & Sons 197

I

International Nickel Co., Inc., The 50
Iron & Steel Products, Inc..... 196

J

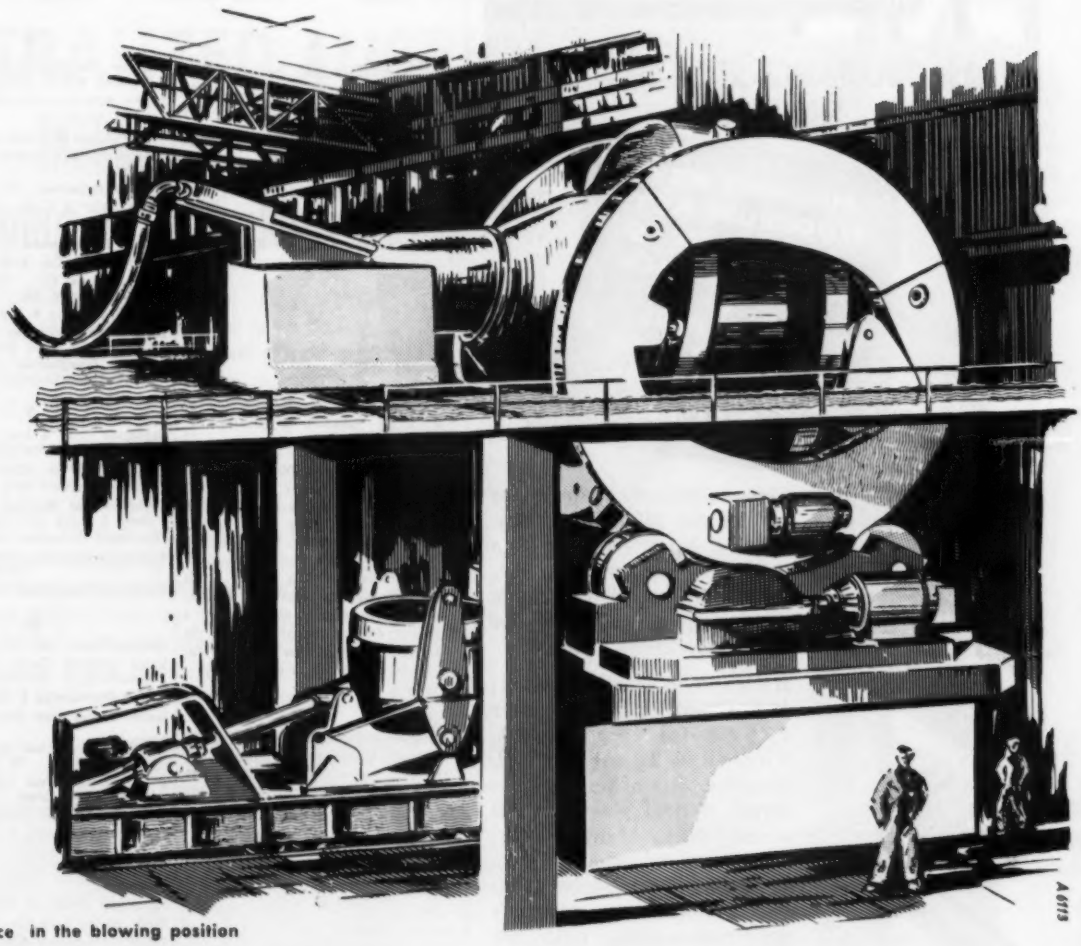
*Jones & Laughlin Steel Corp. Stainless & Strip Division 17, 18, 19 & 20

K

Kaiser Steel Corp. 199
Kaplan, M. S., Company 179
Keystone Forging Company 197
Keystone Steel & Wire Co..... 53
*Kidde, Walter, & Co., Inc..... 15
King Foundries, Inc. 199
Kingsbury Machine Tool Corp.... 119

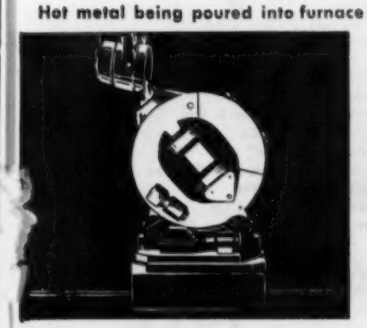
DEMAG

DEMAG is building 100-ton Kaldo furnace plant with exchangeable converter vessels for France.

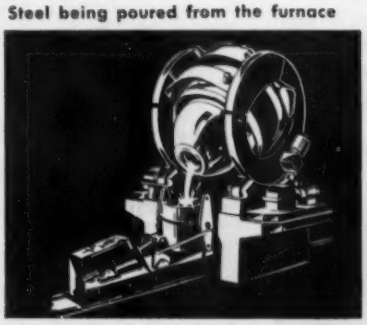


Furnace in the blowing position

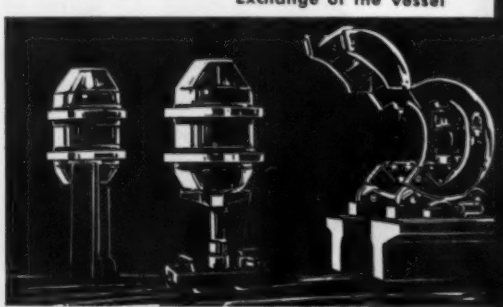
Hot metal being poured into furnace



Steel being poured from the furnace



Exchange of the vessel



U. S. REPRESENTATIVE: AMERICAN DEMAG CORPORATION Pittsburgh 22, Pa., One Gateway Center.

DEMAG AKTIENGESELLSCHAFT DUISBURG GERMANY

Moltrup

CLOSE-TOLERANCE STEEL PRODUCTS SINCE 1892

MACHINE KEYS
WOODRUFF KEYS
SPECIAL KEYS
MACHINE RACK

•

TAPER PINS
STRAIGHT PINS
KNURLED PINS
SPECIAL PINS

Close tolerances mean better results for MOLTRUP customers. No chattering — no misfits — no wasted time. Special keys and pins made to your specifications — the exact tolerances ordered.

KEYS: Gib Head, Feather, H-P, Woodruff, and all other types. PINS: Taper, Threaded Taper, Dowel, Knurled, any other type desired. Made from fine steel screw stock, Monel, brass, aluminum, or other metals. MOLTRUP'S modern high-speed production combines precision quality with low cost.

COLD DRAWN STEEL

All standard shapes — any special shape . . . carbon — alloy — leaded steels . . . close-tolerance key stock.

We invite consultation on your problems. — Try us for emergency needs.

Phone: Tilden 6-3100

(See telephone directory in cities listed)

Moltrup Steel Products Co.

BEAVER FALLS, PA.

Pittsburgh, Pa. Bala Cynwyd, Pa. Erie, Pa. Chicago, Ill.
Detroit, Mich. New York, N. Y. Syracuse, N. Y. Cincinnati, O.
Cleveland, O. Los Angeles, Calif.

ADVERTISERS IN THIS ISSUE

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

L

*Landis Machine Co., Inc. ..... 22 & 23
Lang Machinery Co., Inc. 197
Lansing Stamping Co. 169
*Lectromelt Furnace Div., McGraw-Edison Co. 21
Levinson Steel Co., The 57
*Lincoln Electric Co. 26
*Lindberg Engineering Co. ..... 76 & 77
Link-Belt Co. 37
Loewy-Hydropress Division, Baldwin-Lima-Hamilton Corp. 193
*Logan Co. 160

M

McKay Machine Co., The 25
McLouth Steel Corp. 83
MacCabe, T. B., Co. 196
Mahon, R. C., Co., The 198
*Malleable Research & Development Foundation 11
*Masland Duraleather Co., The, Industrial Products Div. 173
Meriwether, George M., Inc. 197
Messinger Bearings, Incorporated 88
Metallurgical Products Dept. of General Electric Co. ..... 58 & 59
Miles Machinery Co. 197
Moltrup Steel Products Co. 202
*Monarch Machine Tool Co. ..... 40 & 41
Morgan Construction Co. 5
Morrison Railway Supply Corp. 196
*Mundt, Chas., & Sons 82

N

National Business Bourse, Inc. 199
*National Conveyors Co., Inc. 84
*National Forge & Ordnance Co. 49
National Machinery Co. 197
New England Pressed Steel Co. 199
Norton Co., Abrasive Grinding Wheel Div. 85

O

*Oakite Products, Inc. 147
*Ohio Crankshaft Co., The 115
Ohio Seamless Tube Div. of Copperweld Steel Co. 126
Olson Manufacturing Co. 198
Ornitz Equipment Corp. 197
Ottemiller, Wm. H., Co. 192

P

Parker Steel Co. 199
Pittsburgh Steel Co. ..... 74 & 75
*Poole Foundry & Machine Co. 192
*Potter & Johnston, Subsidiary of Pratt & Whitney Co., Inc. 71
Pratt & Whitney Co., Inc. 69
Process Equipment Sales Corp. 197
Purdy Company, The 197

R

*R-S Furnace Co., Inc. 13
*Republic Steel Corp. ..... 62 & 63
Revere Copper & Brass, Inc. ..... 144 & 145
Roebling's, John A., Sons Corp. 65
Rosedale Foundry & Machine Co. 199
*Russell, Burdsall & Ward Bolt & Nut Co. 104
Ryerson, Jos. T., & Son, Inc. 86

S

Saginaw Steering Gear Division, General Motors Corp. 70
Saling Manufacturing Company 199
Sandvik Steel, Inc. 48
*Selas Corp. of America ..... 122 & 123
*Shepard Niles Crane & Hoist Corp. 168
Sieburg Industries, Inc. 199
Silent Hoist & Crane Co. 118
Smith, Thomas, Co. 197
Square D Company 112
Standard Oil Co. (Indiana) ..... 72 & 73
Steel & Tube Div., The, Timken Roller Bearing Co. 102
Sun Shipbuilding & Dry Dock Co. 36
Superior Steel Division of Copperweld Steel Company 153
*Surface Combustion Corp., Heat Treat Division 30

T

Tennessee Coal & Iron Div., United States Steel Corp. 34, 35, 79
*Textile Machine Works 173
*Thomas Machine Mfg. Co. 164
Timken Roller Bearing Co., The, Steel & Tube Division 102
*Townsend Company, The 165
Trabon Engineering Corp. ..... Inside Back Cover
Tractor & Equipment Co. 197

U

Udylite Corp., The 27
Union Carbide Corp., Electro Metallurgical Division 52
United Engineering & Foundry Co. 55
United States Steel Export Co. ..... 34, 35 & 79
*United States Steel Corp. ..... 34, 35, 39, 68 & 79
United States Steel Supply Div., United States Steel Corp. 39
Universal Cyclops Steel Corp. 157
Universal Machinery & Equipment Co. 196

V

Vanadium Corp. of America 154
*Van Huffel Tube Corporation 110
Vaughn Machinery Co., The 99
Victor Equipment Co. 56
*Voss Engineering Co. 33

W

*Wagner Electric Corp. 31
*Wales-Strippit Division, Houdaille Industries, Inc. 148
Wallack Bros. 199
Ward Steel Co. 164
Weatherly Foundry & Mfg. Co. 197
Weiss, B. M., Co. 197
Weiss Steel Co., Inc. 199
*Wheelock, Lovejoy & Co., Inc. 181
Wheland Co., The 12
Whisler Equipment Co. 197
Wickwire Spencer Steel Div., The, Colorado Fuel & Iron Corp. ..... 42 & 43
Wilcox Forging Corp. 199
Williams-White & Co. 83

Y

Youngstown Sheet & Tube Co., The 189

CLASSIFIED SECTION

Clearing House 194-197
Contract Manufacturing 197-199
Employment Exchange 199
Equipment & Materials Wanted 199

TRABON

CENTRALIZED LUBRICATING SYSTEMS

Make more profit per stamping with Trabon

Stop a press due to lack of lubrication and your cost per stamping soars! Add up the man hours it takes to lubricate a press by hand and it will stagger you. Yet, each time your press is down because of these reasons, you are losing money.

That's why manufacturers and operators install Trabon on their presses. A Trabon Centralized Lubricating System delivers the **exact** amount of oil or grease to bearings wherever located. Trabon does this automatically or manually, for hydraulic, mechanical, electric motorized and pneumatic equipment. In this way, Trabon protects expensive bearings, eliminates downtime due to haphazard lubrication, saves lubricant. Be sure to install Trabon on your equipment — soon! You'll reap the benefits immediately!

"Whitened" Trabon pumps and feeder valves provide these Verson eccentric presses with the exact amount of lubricant needed. Note the centralized warning-light system facing the operator, a standard Trabon feature.

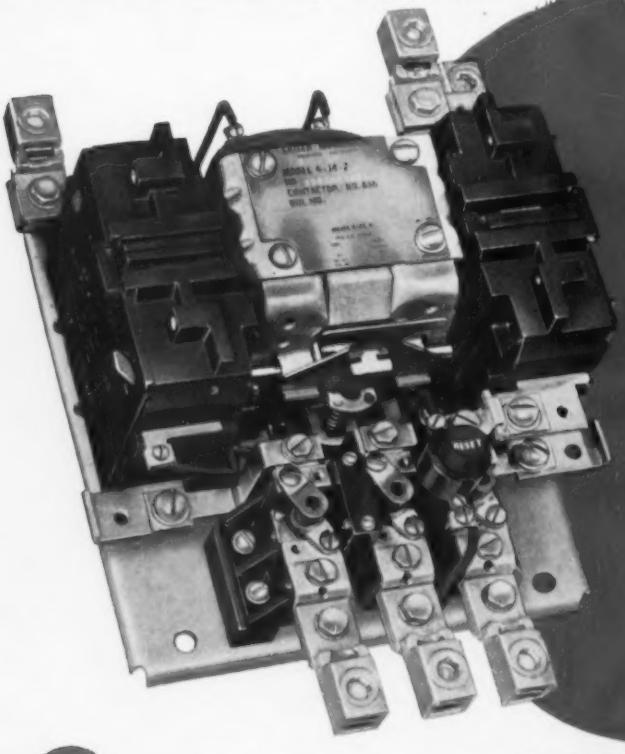
Trabon

Trabon Engineering Corporation

28815 Aurora Road • Solon, Ohio

Centralubes OIL AND GREASE SYSTEMS Maxpells CIRCULATING OIL SYSTEMS

50 Hp 220 Volts, 100 Hp 440/550 Volts Max. Polyphase



New SIZE 4 STARTER

...another Cutler-Hammer Three-Star achievement

New *compact design saves valuable panel area*

New *parallel contact design provides increased electrical life at full capacity*

New *low mass movable members insure superior mechanical life*

This is the new Cutler-Hammer NEMA Size 4 Starter . . . industry's first large horsepower starter offering all the desired features of the famous Cutler-Hammer Three-Star Motor Control line. Smaller, more compact, this new starter simplifies control panel design and saves valuable panel area. Tests of the new parallel contact structure show vastly improved electrical life even when operated at full capacity. Further, this new design reduces the size and weight of the movable members resulting in less impact wear and unsurpassed mechanical life. We've tested it against all others, why don't you? The new Cutler-Hammer Size 4 Starter ☆ installs easier, ☆ works better, ☆ and lasts far longer. Get all the facts today. Write for the new descriptive bulletin EN125-Y-246 Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

Look for these outstanding features . . . you'll find them only in Cutler-Hammer Three-Star Motor Control

- U-shaped cover easily removable for unobstructed inspection and accessibility
- Straight through wiring . . . line terminals at the top, load terminals at the bottom
- New pressure type terminals cut wiring time and effort
- Adjustable overload relays can be set to trip within 3% of full load motor current
- Precision cast overload sensing coils can't lose their accuracy
- Widely desired three-phase, three-coil overload protection is a standard optional feature . . . no special attachments or enclosures
- Indestructible molded magnet coil . . . color coded for positive voltage and frequency identification
- Easily installed convertible electrical interlocks require no special adapters . . . provide up to four extra control circuits
- Available as non-reversing, reversing, and multi-speed contactors and starters in the open type, NEMA 1, and all special purpose enclosures.

CUTLER-HAMMER CONTROL C-H

CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wis. *Division:* **Airborne Instruments Laboratory.** *Foreign:* **Cutler-Hammer International, C. A.**

Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation, Inc.